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Niger river
(Ic)

A

DISSERTATION

ON THE

COURSE AND PROBABLE TERMINATION

OF

THE NIGER.

BY

LIEUT. GEN. SIR RUFANE DONKIN,
G.C.H. K.C.B. & F.R.S.

"AMNIS AB HIS TACUIT."—*Ovid. Metam.*

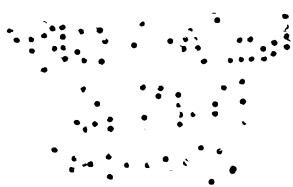


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TO
FIELD MARSHAL
HIS GRACE THE
DUKE OF WELLINGTON, K. G.
FIRST LORD OF THE TREASURY,
&c. &c. &c.

MY LORD DUKE,

The only excuse I can offer for this intrusion is, the Leisure and Inactivity to which persons of my profession have been reduced by your Grace's Victories; which, having given Peace to Europe, leave the Soldier without occupation.

Finding myself thus unemployed, I have written the following Dissertation on a long-disputed literary subject, and which

I now beg leave to dedicate respectfully to your Grace.

That your Grace's measures for the Prosperity of this Empire in Peace may be as successful as they have been for its Security and Glory in War, and, that the Civic Crown of Oak may be added to those of Laurel and Olive which have long been decreed to you by the united voice of Europe, and your own Country, is the sincere wish of

Your Grace's most faithful

and most obedient Servant,

R. S. DONKIN,
Lieut. General.

Park Street, Grosvenor Square,
April 24th, 1829.

NOTICE

CONCERNING THE TWO OUTLINE-MAPS ACCOMPANYING THIS DISSERTATION.



THESE Maps do not pretend either to give accurately all the latest discoveries, or to be drawn with strict geographical exactness in every part;—they have been compiled solely with a reference to the Dissertation which they accompany, and which they are meant to elucidate. Those who may want a correct map of Africa, must go to some other source; but the two outlines herewith given will perform all they were meant to perform;—they will exhibit the author's meaning; they will show the relation of places mentioned in the text to each other; and they will answer to the references made to them in that text.

The Map entitled “Outline of *Central Africa*,” was laid down exactly and most scrupulously according to Ptolemy, as far as the Gir and Niger are concerned, as is detailed in the Dissertation.

The one entitled “Outline of a Map of Africa,” in general, had for its object chiefly to show the

great ranges of mountains, by the influence of which the great rivers of that continent were probably formed, and their courses controlled. It is not at all meant to assert that the Congo river rises just where it is represented to rise in the Map; nor, that the branch called the Zaire does absolutely draw its chief source from the Zanguebar part of the mountains of Lupata: all that is intended is, to show that the Congo *may* flow into the Atlantic in its present continued and majestic volume, without our cutting through a range of granitic mountains, to pour into it the reluctant Niger. The great central range which crosses Africa from east to west, whether broken or continuous, certainly presents in its southern face ample means of supply to a river of any conceivable magnitude, supposing the waters to be collected finally in some common valley. This central range rises to view, either in parts or as a whole, as is proved by the testimony of various travellers, through above sixty degrees of longitude, along the climate of almost perpetual rains; and the accumulation of waters on either face would be quite sufficient to supply the Nile of the Negroes or Niger, the Nile of Bornou or Geir, and the Nile of Egypt on the north side of the range, and the rivers Formosa and Congo on the south side.

These considerations seem to account for the great volume of the Congo, on *known* sufficient causes, existing in the great central range; but the immense unknown, unexplored space between the Eastern and Atlantic Oceans, furnishes, no doubt, immense though minor ranges of mountains, branching out from the central range, and from the mountains of Lupata, which would afford a farther and a never-ceasing supply of fluid to the rivers originating in them, or deriving accessorial streams from them; but, in the absence of all authentic information respecting this wide unknown region, no attempt has been made to introduce into the accompanying outline of Africa any thing that has not been sanctioned by some modern map; though a complete central system of subordinate mountains may be easily imagined by a person used to contemplate the great formations of our globe in a general way.

In regard to the great range running down the eastern coast of Africa to the Cape of Good Hope, to which I have given the usual name of the Mountains of Lupata, I am aware that it has been broadly said that no such range exists. It is a matter of little consequence to my argument, whether any such mountains as those called Lupata in most maps do exist exactly as there represented; but I maintain,

that wherever the eastern coast of Africa has been explored, indications, *parts* of a stupendous chain of mountains, have been seen rising into the clouds, at 200, 300, or 400 miles from the sea; and we naturally, and I think we justly reason, when we infer what we do not see from what we do see in this case, namely, that if we find every here and there long and lofty ranges of mountains running in the same direction, during a course of 2000 or 3000 miles, we may conclude that the intermediate, though unseen spaces, are *probably* filled up by a continuance of those same ranges. The rudiments or *disjecta membra* of such a chain as I have set down, are known to exist.

The "Snowy Mountains" in the annexed Map, which are a part of the great eastern range, I myself saw when travelling from Port Elizabeth to the northern frontier of Graaf Reynet. The blocks of granite washed down from them into the plains below, attest their primitive formation, and that of the great chain of which they are a part.

A

DISSERTATION

ON THE

COURSE AND PROBABLE TERMINATION

OF

THE NIGER.

THE doubts which, from the days of Herodotus, that is, for more than two thousand three hundred years, have hung over the Course and Termination of the Niger of Central Africa, and the discussions which have taken place of late years concerning that question, have recently, though accidentally, attracted my attention in a particular manner, while engaged in some researches on the antiquity of Northern African Science and Literature, as compared with those of certain nations in the

B

East. In following up those researches, I was first struck with the very general application of the name or term *blue*, or *black*, to large rivers; and I began by adopting, as the basis of my inquiries into the present subject, the fact, as I then supposed it to be, of the Niger being called by that name because of the blackness or depth of its waters,—an opinion which I soon discovered to be erroneous; although I found myself supported in it by no less an authority than Vitruvius, the celebrated writer on architecture in the Augustan age. While employed in following up and detecting my error on this point, I came to other conclusions, which are developed in the following pages; and which I hope will be found to rest on more solid foundations than the opinion to which I have just alluded, and which I so speedily abandoned.

As I proceeded, I began to suspect that the difficulties which had embarrassed this subject, lay in the first instance rather in words or names than in things; and it appeared to me that a little verbal criticism,

however humble in its nature, might do much towards clearing away the preliminary difficulties which had hitherto blocked up the approach to the question; and I next felt that it was also necessary to begin by defining and agreeing on the exact terms of the problem to be solved, which I conceive have not hitherto been clearly stated.

The desideratum, or postulatum, as I understand the matter, has been to find a large river in Central Africa, which Ptolemy and other ancient writers called the Niger, and which we still call so; which shall either flow into the Atlantic, or into some great central Lake or Marsh; or lose itself in central sands; or unite itself with the Egyptian Nile; or empty itself by some other channel into the Mediterranean Sea. These appear to be all the modes by which a great river known to exist in Central Africa, but whose termination is unknown, can be disposed of.

In the course of my researches I soon suspected that the reason why geographers and travellers had hitherto failed in settling this question was, because they had made

a verbal or grammatical error in stating the object of their search to be **THE** Niger, or rather **THE** Nile, (for by the name of Nile the great river of Central Africa has been generally known to ancient and Arabian writers,) instead of searching for **A** Nile—or **A** Niger; and they have thus been endeavouring to unite and reconcile in some one individual river, qualities and circumstances which have been predicated of several distinct rivers, and they have thus confounded a specific appellative with a generic and descriptive one.

My attempt in the following pages will be to reconcile all or most of what has been said of the Niger, from the times of Herodotus and Ptolemy, down to those of Park and Denham, notwithstanding the many apparent contradictions we find in it; and this I hope to do partly by the rectification and proper use of a grammatical particle, in following out the solution of the geographical problem before us.

My research then shall be directed to the discovery, not of **THE** Niger or Nile hitherto demanded, which shall unite in

itself all that has been related by ancient and Arabian writers, and by natives, of *several* Niles watering North and Central Africa,—but to show that all, or most of what has been said or written, if applied to *A Nile*—that is, to some Nile or great river, and not to any specific one—will be reconcilable with fact and reason.

At this stage of the inquiry I must have recourse to etymology, which is, I am well aware, often an unsafe and delusive guide: but I offer etymology here only as a *quantum valeat*, to be admitted no further than it can make good its claims on the clearest evidence as an auxiliary,—and not as the basis on which to rest an entire argument.

The etymology and meaning of the word *Nile*, then, will be my first inquiry. We find the name or term, *Nile* or *Neil*, applied to deep and large rivers, not only in Africa, but in the East, in parts of the globe very distant, and at periods very remote from each other; but, implying in all cases the blue, black, or dark colour of the river to which this name is attached.

The first language I shall go to is the

Hindoostanee, which is in many instances derived from the Sanscrit. In the Hindoostanee, as well as in the Persian and Arabic languages, "Nile," "Neil," or "Neel," means Blue. "Neil-ghau," is the Blue Cow,—an animal most of us have seen in Europe, though a native of Asia. Neil-Panee is Blue Water, and in Hindoostanee is applied to any mass of deep water. A greater intensity or depth is implied by the word "Kolla" or "Kala," Black, as "Kala-Panee," or the "Black Water," which is the name given in Hindoostan to the great ocean, over which the English pass, say the natives, in going to and coming from Europe. Now here we have the term or idea blue, or black, applied by Asiatics to water when congregated in great quantities; and we shall see by-and-by the same idea and word, "Neil," imported by Arabian merchants into Central Africa, and applied to all the large rivers of which they have any knowledge in that country. The natives of India generalize in the same way; and they call the river Indus, not only a Kala-Panee, or the Kala-Sinde, but they

give it the descriptive generic name of " Nile." The people on its banks, I am told, call it *The Nile*, using the definite article to express *their* great river,—in the same way as an Arabian geographer would call our Thames *the Nile* of England, while the Severn and the Humber would be called each *a Nile*. The definite article is used also in Egypt by the natives when speaking of their Nile; and I once heard a native of Hindoostan, who had travelled a good deal, call the Ganges "*The Nile*;" in all which cases nothing more was meant than a great or blue river. But the name given by the Greeks to the Egyptian Nile was *Μελας*; and in Hebrew that river is called " Shihor;" both which words imply, " a black river."

Again, the Syracusans call *their* largest river the Cyane, or *Κυανη*, from its deep or blue waters: in short, Cyane means " Neil Panee." Ovid personifies and makes the Cyane all over as blue as indigo. By the way, Neil is the Hindoostanee word for indigo. Ovid says of this river nymph,

" Cærulei Crines, Digitique et Crura, Pedesque."

The chief river of Æthiopia is called "Bahr el Azrek," or the Blue River. Here, then, is another Nile; and thus it was that the earlier geographers, in speaking of a large river in Central Africa, called it by the generic name of "Nile;" while some of the Arabian writers, fully aware of the true meaning and general use of this term, called the river of which we are speaking "The Nile of *the Negroes*," by way of distinction. I will here just remark, that the name of "Niger" is unknown both to the Arabian geographers and to the natives of Central Africa. We have further an exemplification of the force of the word Nile or Neil, *ex contrario*, from an opposed name being given to the upper part of the Egyptian river, which is called *there* a "Bahr Abiad," or *White River*, to mark its white, shallow, foaming course amongst rocks, in contradistinction to the deep blue Nile, which it becomes lower down. Park, unconsciously catching the descriptive language of the country in which he had been for some time, on first seeing the Gambia, or some large branch of it, rolling under the moun-

tain on which he stood, calls it "The *Black River*;" and he also speaks of the Plain which extends from the Faleme to the "Black River."

But Major Denham gives us a notable instance of the generic application of the word "Nile;" and I only wonder that the question he records did not at once awaken his attention to the fact, that "Nile" was the general appellative of all large rivers, and not of a specific one only. "I had before been asked," says Major Denham, "if the Nile was not in England?" the real meaning of which was, "have you no Nile or large river in England?" But Major Denham, not understanding it, said, "No, *the Nile* is not in England." Now, if this Moor were a literary man, and kept, as Major Denham did, an account of his travels, I can quite imagine such an entry as the following in his journal:—"On such a day I met a white man called Major Denham, a man of courage, discretion, and truth: he, like all the other travelers from his country, which is far in the North, inquired constantly for a great

“ river, calling it *The Niger*, a name we
“ known of,—but it is clear that they all
“ want to see a *great river*. From this I
“ conclude that they have no great river
“ in his country called England; indeed I
“ asked him, and he said there was none.
“ I suppose, therefore, that his country
“ must be a dry, bad country, not like ours,
“ watered by a Nile; and I begin to suspect
“ that these white men want to discover a
“ country where Niles are to be found, that
“ they may leave their own deserts, and
“ come and live by our deep waters.”
Now, after all, such a conclusion on the
part of the Moor would be about as fair
as some we have come to on the same
subject.

Of the word or name *Quorra*, *Quolla*,
Kowarra, and others similar, applied to the
Niger, and apparently to other rivers, I
can give no etymological account; I am
assured by a competent orientalist and
Arabic scholar, that it is not an Arabic
word, or traceable to the Sanscrit, Persian,
or Hindoostanee. I conclude, then, that
it is an African name given by the natives,

but evidently used, by what Park, Denham, and Clapperton say, in a general sense, and applied to any large river, as the word Nile is; and if so, we shall have here another instance of the generalization of a word by the natives, which our travellers have not perceived, but have taken the word or name *Quorra*, *Quolla*, or *Kowarra*, (for they are all the same,) for the specific name of the river on the banks of which they were standing,* or about which they were talking.

Before I have quite done with etymology and grammatical disquisition, I must go to the earliest writer we have on African geography, Herodotus, and see how he handles the two articles, "THE" and "A."

We find him, in his *Euterpe*, speaking of a certain great river in Central Africa, to which five young men of the Nasamonian nation had penetrated, by crossing Libya; and Herodotus quotes King Etearchus as

* May we not conclude that the barbarous names of Geir and Ni-geir, used by Ptolemy, may have had a similar import with the names *Quolla*, *Quorra*, &c.?

telling him that "the river these young
 "men saw was *the Nile*"—και Ετεαρχος συνεβαλ-
 λετο ειναι τον Νειλον. This τον* was a disappoint-

* I am quite aware that an opinion has been broached that the Greek article is a mere non-entity,—that it may be either omitted or inserted without affecting the text, that Homer originally composed his poems without articles, and so on. I am not one of those who can subscribe to this doctrine under any modification; on the contrary, I have always considered the Greek article as holding a very important place in that elegant and ductile language. The Greeks did, no doubt, introduce into their dialogues and writings, which were all more or less rhythmical, in the manner of Italian recitativo, many small words with little or no meaning, for the purpose of improving the rhythm of their sentences, or of melodizing their sound; for instance, *μεν, δε, ρα, θεν*, and some others, which was abundance for this purpose, without immolating a living part of speech on the altar of Euphonia. They had, besides, a powerful aid to this system of musical intonation in the digamma, (absurdly called sometimes *Æolic*, as if each dialect had not its own digamma,*) which I have always considered as a sort of Claude Lorraine tint, with which they both melodized and harmonized their language with a taste and grace of which our organs can neither convey nor receive any adequate impression:—but to follow up the

* See additional note on the digamma, at the end of this volume.

ment to me, because I suspected that Etearchus must have expressed himself

digamma *πτερον* here, would lead me away from my present purpose.

I repeat, I cannot agree with Scaliger in calling the Greek article a "*loquacissimæ gentis flabellum*," nor with Budæus, in thinking that the article in the hands of the Attic writers was either omitted by ellipsis, or inserted by pleonasm, according to the fancy of the author; and I am glad to be able to adduce the authority of Bishop Middleton as to the importance and entity of this part of speech, although one sees, from his very first page, that his remarks are worded in a way to converge and bear on a particular point he had in view, as the ulterior object of his learned work on the Greek article. He finishes the fourth section of his second article with these words:—"On the whole, it appears "that the article may be used, either when conjointly "with its predicate it recalls some former idea, or "when it is intended to serve as the subject of an hypothesis. All the various uses of the article will come "under one of these two divisions." This passage is decisive as to Middleton's notion of the power and substantiality of the Greek article. Again, p. 155, he says, that an article with its predicate *recalls* an idea "which "has already had a place in the hearer's mind." He says, p. 36, that "the Greeks whenever they wish to "speak of a thing *definitely*, do employ the article, and "this end could not by any other means be attained." And in another place he cites *της Πολεως*, as signifying, *by means of the definite article*, Athens, *κατ' εζοχην*.

otherwise; and I expected, too, that the accurate Herodotus, from getting his information on the spot, would have caught the spirit of the language of the people he was amongst, and have told us, when he came to translate what this African king said into Greek, that these young men saw “*a Nile*,” making “*Nile*” a generic term.

Knowing how often Herodotus had been misrepresented by his quoters and by his editors, I determined to look further, and see if this *τον* had not been interpolated, for I still felt a reliance on the accuracy of the historian of Halicarnassus, for reporting exactly what he *heard*, as well as what he *saw*. Accordingly, having procured the edition of Schweighæuser, printed at Paris, in 1816, by Treuttel and Würtz, I find the following decisive confirmations of my expectations in the *Variæ Lectiones* of the *Euterpe*.

These two last passages bear directly on my view of *τον Νειλον*. I will not follow this subject any further, and I have touched on it merely that it may not hereafter be objected to me that I was not aware that a Greek article was reckoned by some men of great name a mere “*Nominis Umbra*.”

Schweighæuser says, on l. vii. cap. 33. of Euterpe, "abest τὸν F. et Pa.;" that is, the τὸν is omitted in the Florentine MS., and in a celebrated Parisian MS., of both which he speaks as follows:—"Quem codicem notâ F. distinxi, membranaceus ille est olim Florentinus, cujus usuram * * * Creutzero debeo," &c. "Vetustatem ejus, quum ipsam embranarum conditio declarat, tum antiquus scripturæ modulus;" and Montfaucon, in speaking of this same parchment MS., calls it, "Codex elegans decimi seculi membranaceus."

Schweighæuser next calls the Parisian MS. "Hunc Parisiensem Codicem Hero-doteorum Principem," in which character Larcher agrees; and the maker of the Royal Catalogue calls it "codex longè pretiosissimus," to which Ruhnken adds his testimony that it is "ingentis pretii."

Thus, then, these two most ancient and highly valued MSS. confirm my conjecture, and prove the τὸν to be an interpolation, probably by some verbal critic, (I feel that we are the lowest of all literary drudges,)

who could not conceive the possibility of "*Nile*" being a generic term, or applicable to any one thing but *the* river which flows through Egypt.

I flatter myself with the hope that this intrusive *τον* will be left out in all future editions of Herodotus, and that Etearchus's words will be as faithfully reported by editors as they were by the Greek historian.

It is true, Herodotus afterwards inclines to the opinion, that the river these young men saw was the same as, or had a communication with, the Nile of Egypt; and Etearchus may have adopted also that opinion, which appears to have been pretty general amongst the ancients; but the rejection of the definite article *τον* in the two valuable MSS. cited, and its retention by them elsewhere, where Herodotus speaks specifically of the River of Egypt, which he calls *τον Νειλον*, seem to imply clearly that the language and phraseology of Etearchus were meant to be general when speaking of the river seen by the Nasa-monians, and in subsequent cases, when speaking of Egypt, to be specific.

Herodotus tells us, moreover, in his Polymnia, that there was "a Nile," or at least a black or deep river, in Thessaly. His words are, in speaking of this river, *ος καλλεται Μελας*; for *Μελας* is the translation into Greek of the oriental word Kala, and, with some modification, of Neil or Neel, and it was only by long use that *Νειλος* became a legitimate Greek word. Indeed the Greek and Latin historians mention seven or eight rivers by the name of "Melas."

But I have said enough on this part of the subject.

In regard to the Gir and the Niger, as we now see them written, I must first beg to be allowed to restore them to their original orthography, as given by Ptolemy, from whom we have taken these names of two rivers in Central Africa. He calls them Γειρ, Geir, and Νίγειρ, Nigeir; or, as I would write the latter name, Νί-Γειρ, Ni-Geir; for I conceive the Ni, added to Geir, implies some distinctive difference between the two rivers in the aboriginal language: as I imagine these names were given by the natives and adopted by Ptolemy, just

as that of Quolla or Quorra is by us; but what that difference was, or what these names signify, it would be in vain now to inquire, when not only the name of the language, but of the race which used it, is irretrievably lost.

I now come to the course of the Niger, or Ni-Geir, as I must beg leave to call it after Ptolemy. This river has been made to run from west to east; from east to west; into a lake; out of a lake into the Egyptian Nile; into the Atlantic; and to end in a sandy desert. It is evident that all this cannot be true of any one river: indeed I hope to prove, in the course of this dissertation, that the Ni-Geir terminates in no one of the modes above mentioned,—or which have been hitherto assigned to it. And the moment we apply a generic term instead of a specific one, to what Greek, Latin, Arabian, French, and English authors have severally written and affirmed about *a* Niger,—for instance, the moment we adopt the original term for all great rivers, Neil, Neel, or Νεῖλος, and apply it to the river in question, we shall find our geographical difficulties dispersing one

after the other, like mists before the sun, and all that authors and travellers have told us, each of his *own* Niger, will be reconcilable with nature and with recent discoveries. And first, of the course of the Niger.

There is no doubt but a Niger, or Nile, that is, a large and deep river, rises in the mountains of Mauritania, not far from the shores of the Atlantic, and then runs from west to east. Herodotus twice tells us, in his Euterpe, that the African river of which he was speaking, and which was unquestionably the modern Niger, ran from west to east.

The account taken back by the five young Nasamonians was, that “after having crossed an immense desert of sand, they arrived at a city, and that, past that city flows a great river; it flows from the west towards the rising sun:” παρα δε την πολιν ρεειν ποταμον μεγαλν,—ρεειν δε απο Εσπερης αυτον προς ηλιον ανατελλοντα. “And Etearchus added, that this was a Nile;” that is, a dark blue river: και Ετεαρχος συνεβαλλετο ειναι Νειλον, not τον Νειλον, the τον

being omitted here on the authority of the valuable and ancient Florentine and Parisian MSS. above cited; and, just before this, Herodotus, in speaking of this same river, says, it “flows from the west, and “from the setting sun,” *ρεει δε απο Εσπερης τε, και ηλιε δυσμεων.*

I will take this opportunity of expressing my opinion, that the part of the river to which the five young Nasamonians came, must have been somewhere a little to the westward of the Tchad, and not near Tombuctoo, as has been suggested, and for the following reasons:—Herodotus says, that these five young men took their route to the *south-west*. This *westing* in their course would prevent their falling in with the river any where *east* of the Tchad, for the Tchad is pretty nearly under the same meridian as the Great Syrtis, near and about which the Nasamonians dwelt: on the other hand, had these five young men gone *far* to the westward of the Tchad, they would have fallen on Sultan Bello's Kowarrama, and then on their return they would have described the Nile they saw

as flowing to the *west*, and not to the *east*, for the course of the Kowarrama is westerly. My objection to the supposition that they reached the river at or near where Tombuctoo now is, rests chiefly on the immense distance they must have travelled to the westward, as well as the great addition they must have made to the length of their journey, when the Nile they saw might have been reached at the point I have selected so many hundred miles nearer; but this is a matter on which it is not necessary to insist much. I shall, therefore, only add, that these young men said that they were conducted over vast morasses in their way to the city; which I conjecture to be the morasses adjacent to and dependent on the Lake of Ghana, amongst which they would naturally fall, either on the north or on the south side of them, according as they directed their course on Tombuctoo, or on the point of the Niger I have indicated.

However, as far as the direction of the course of the river is concerned, Herodotus is decisive as to its being from west to

east. Ptolemy is equally decisive on this point, as we shall see by-and-by, when discussing his geography. Pliny says the same thing, by making the Nile of Egypt originate in Mauritania, on the authority of King Juba, who, as a sovereign and a native of those parts, must have had a pretty accurate knowledge of a region which seems to have formed a portion of his dominions,—on the history of which, as well as of other countries, he had written a work of high reputation. Pliny's words are these: "Nilus" (sc. *Ægypti*) "incertis
" ortus fontibus, et per deserta et arden-
" tia * * * et immenso longitudinis spatio
" ambulans, * * * originem, ut Juba rex
" potuit exquirere, in monte inferioris
" Mauritaniae non procul oceano habet,
" lacu protinus stagnante quem vocant
" Nilidem." Pliny then makes some observations implying the communication this stream has with the Egyptian Nile, by which an easterly course is clearly indicated; and he then says, in his figurative way, "ex hoc lacu profusus indignatur
" fluere per arenosa et squallentia, condit-

“ que se aliquot dierum itinere. Mox alio
“ lacu majore * * * * erumpit, * * * iterum
“ arenis receptus conditur rursus viginti
“ dierum desertis *ad proximos Æthiopus*,
“ atque prosilit fonte illo quem Nigrin vo-
“ cavere. Inde Africam ab Æthiopiâ dis-
“ pescens *medios Æthiopus secat*, cognomi-
“ natus Æstapus.”

Now the course of a river which rises in Mauritania and runs through Æthiopia, must be from west to east; but he goes on and traces the same river through Egypt, till at last he tells us, “ multis quamvis
“ faucibus in Ægyptium mare se evomit.” I am thus particular as to what Herodotus, Ptolemy, and Pliny have said of the easterly course of this African river, to show that they were evidently speaking of the same river as that which we now call the Niger. But the late evidence of Park, Denham, and Clapperton, who all sailed down the Niger to the eastward, sets the easterly course of the river in question beyond all doubt; and any further adduction of evidence on this point would be superfluous: nor would so much have been

here said on that subject, had not Edrisi and Abulfeda been occasionally brought forward, by even some late writers, as authorities for the *westerly* course of the Niger. It appears quite clear that Edrisi (and Abulfeda was but his echo,) had got hold of some account of Sultan Bello's Kowarrama, which does run from east to west. This branch Edrisi mistook for the main river, and he called it "the Nile of the Negroes," or "of Nigritia," which is the Arabic name of Ptolemy's Niger. But it is waste of time to say any more on the course of this river.

Solinus, the imitator of Phny, tells us, on the authority of Vitruvius, that this river, which was at first called "*Dyris*," was afterwards called "*Melas*," which means "*Nigrum*," or black. From which it is evident that the name of Niger was known to the Romans in the time of Augustus, for in his reign Vitruvius flourished,—although he was ignorant of the true etymology of the name Niger, or rather Ni-Geir; and he fell into a very natural error, from which I did not escape myself

until I read Ptolemy in the original Greek, an advantage Vitruvius, who died long before Ptolemy was born, could not possibly have, when I was obliged, though I confess reluctantly, to give up "Niger," as meaning "black," or "dark-coloured," as applied to the river, although it made well for my etymological arguments.

Having established, I hope, two preliminary points, namely, that when the term *Nile* is used, by ancient or Arabic writers, it does by no means signify exclusively the river of Egypt, but *any* great river; secondly, that the Ni-Geir of Ptolemy, which we now call the Niger or the Nile of the Negroes, flows from west to east, I will proceed to the author next in date and authority to Herodotus already cited, I mean Ptolemy; and after doing my best to get at his exact meaning relative to the Geir and Ni-Geir, I shall construct a map showing the courses of those two rivers according to that meaning,—for, no map now extant, however Ptolemy's name may have been introduced and used, accords, at all, with what Ptolemy has

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really said,—and I shall accompany the map with such remarks and illustrations on the Geir and Ni-Geir as Ptolemy himself seems to me to warrant.

ON PTOLEMY AND HIS GEOGRAPHY OF
CENTRAL AFRICA.

I HAVE been much disappointed in Ptolemy as a geographer and guide as far as relates to Central Africa. I flattered myself that as a mathematician he would have been at least accurate; and, that, as a philosopher, living under and patronized by two such emperors as Hadrian, and Antoninus Pius,—the former a great traveller and antiquary, and, the latter a statesman and patron of learning,—he would have taken a large and philosophical view of his subject, and have availed himself of their power to obtain authentic and full information; but, in all these my expectations he has failed me.

On opening Ptolemy, and looking into Gerard Mercator's map,* as well as into

* This Gerard must not be confounded with Nicholas Mercator, who was born above 100 years after him, and who laid claim to the invention of a method of navigation which goes by his name, but which in fact was the discovery of Edward Wright.

the Latin translation to the Frankfort folio edition by Peter Montanus, I soon found that the map-maker almost always, and the translator very frequently, only served to make the geographer more obscure and unintelligible.

Mercator, in the map, has without any compunction, made rivers run into and under mountains, in a way for which he has not the slightest sanction from Ptolemy, any more than he has for having disposed of these extraordinary rivers in certain parts of the country: and, I here must express my regret that the learned and accurate D'Anville, as he is justly called, has put down the Geir and Ni-Geir in his map also in a manner which is at total variance with Ptolemy's text, which he seems not to have always consulted. In one instance D'Anville without looking at Ptolemy's text, has evidently taken Montanus's translation of the word $\Phiαραγγ\acute{\iota}$, which Montanus renders, improperly, by the word "vallis"—which D'Anville adopts, and gives us "*la vallée Garamantique*;" while Mercator, the manufacturer of the map, first lays

down the place wrong, and then, determined to lose nothing, calls it in his map, “*Garamantica Vallis Mons*,” making it at once a valley and a mountain: it became therefore necessary for me to abandon both Ptolemy’s translator Montanus, and his map-maker Mercator, and to adhere closely to the geographer’s own text; according to which I shall now proceed with the construction of my map, and with my analysis of his account of the Geir and Ni-Geir.

In the very outset in constructing my map, I discovered that there must be some very great error somewhere, about Ptolemy’s longitude; either in himself, or in his commentators and map-makers. It is true that geographers in his time had not the means of ascertaining the longitudes of places as accurately as the moderns; but it struck me at once, that Ptolemy could never be out *seven* whole degrees of longitude in regard to the mouth of the river Salathus—which emptied itself into the Atlantic on a coast running about north and south in a meridian only *two* degrees

from Ptolemy's *supposed* first meridian, which geographers have hitherto drawn through Ferro. Ptolemy says, Σαλαθε πῶταμε εκβολαι θ'. κ'β', that is, "the mouth of the Salathus is in 9° E. and 22° N." Whereas, it is in about 2° E. of Ferro. Of the error in the latitude of the Salathus I shall say nothing further here, as I shall have a few remarks to make on some of Ptolemy's latitudes hereafter; but, in regard to the longitude, I felt quite sure that it was impossible for Ptolemy to have committed so gross a mistake as that of seven degrees out of nine, at the very threshold too of his *supposed* first meridian; but which error he must have committed if he made the mouth of the Salathus in 9° E. of Ferro. And he must have also committed a greater error in placing the mouth of the river Massa, in 10° E. of Ferro,—which is the longitude given,—when it is known that the line of coast on which those rivers disembogue themselves into the Atlantic, not far from the Senegal and Gambia, (which Ptolemy calls the Daradus and Strachir,) is not above two degrees of

longitude from Ferro, as may be seen on a reference to any modern map of Africa. However, I was unwilling to disturb a received opinion, and, I went on constructing my map, step by step, according to the meridian of Ferro, adhering closely to Ptolemy's own words, and I thus proceeded till I came to deal with the Lakes Chelonidæ, with the Garamantica Pharanx, and other places he mentions in speaking of the Geir, when I found that in laying them down I had exhausted all the longitude I had at my disposal; and that by a formidable land slip of seven degrees eastward, I was overlying almost the whole of Bornou, the whole of Darfoor, and all the western part of Abyssinia; and, the Lakes Chelonidæ and Nuba and the Garamantica Pharanx had taken possession of the bed of the Egyptian Nile, whose general course was in the longitude assigned by Ptolemy to the three above-named places,—by which not only was the known geography of the Nile utterly overturned, but, the Garamantica Pharanx, which Ptolemy assigns as one of the sources of the Geir, was transported at least a degree be-

yond the Bahr el Abiad, the Ptolemæan source or western branch of the Nile; so that the Geir must have absolutely run *across* that branch of the Nile to have got to the Lakes Chelonidæ, in which Ptolemy gives us to understand that the Geir was lost.

This utter confusion of places obliged me to reconsider the subject, and to consult Ptolemy's own words again.

Now Ptolemy's first meridian, as he expressly tells us, was drawn through the westernmost of the "Fortunate Islands,"* or rather "Happy Islands," *μακάρι* is the word he uses. The first question to be asked, therefore, is, where were those "Happy Islands," situated? It has been the practice to say that those Islands are the Canaries; why I know not,—unless it be because those who conferred this name on them thought it would be a more "fortunate" or a "happier" lot to live in the Canaries, than in the Cape Verd Islands, which are really Ptolemy's "Happy Isles;" in which opinion I concur, having visited

* See note No. 1. at the end of this volume.

both sets of Islands, myself,—and a viler place than the Cape Verds, is no where to be found; but, notwithstanding this, the Canaries are *not* Ptolemy's "Happy Isles," but, the Cape Verd Isles are; for he tells us, that the "Happy Isles" lie between the 10th and 17th degrees of north latitude, which is precisely the situation of the Cape Verds. On this the editor of the Frankfort Folio, 1605, has this note: "*Canariæ Insulæ hodie dicuntur: septem habitatæ, tres desertæ sunt, tamen septentrionaliores quam Ptolemæus tradat, * * * Hesperides Insulæ hodie Insulæ Capitis Viridis.*" Where this learned annotator got the first part of his information, "that the Fortunate Isles" of Ptolemy are now called the Canaries, he does not tell us; but, of the two, I prefer the authority of Ptolemy himself, who tells us very plainly that *his* "Fortunate Isles" are those off Cape Verd, and he tells us this by fixing them in that very latitude.

On satisfying myself on this point, I had to draw a new meridian through the westernmost of Ptolemy's "Fortunate Isles;"

and, I found it was just about seven degrees to the west of Ferro, and that, measuring from it, the mouth of the Salathius was, as Ptolemy lays it down in 9° E.

But, on this point we have the testimony of Edrisi, a geographer who, it is true, has been much overrated. His work, amidst much useful information, contains many errors:—in it he has borrowed from Ptolemy largely without acknowledgment, and he has perverted him without apology. However, Edrisi, after all, collected a great deal of important matter relative to African geography, although he seems neither to have been very discriminating in the choice of his informants, nor over diligent in digesting what they told him.

He tells us in the beginning of his account of the first climate, that “the sea in the west is called the sea of darkness, beyond which nothing is known,” that in it “are two islands called *Perennes*.” This is the word used by Gabriel Sionita, in his translation into Latin, and, this word seems to signify flourishing in perpetual spring, or “evergreen islands, from which Ptole-

“ my took his longitude.” Now, this word “ Perennes” or “ evergreen” is very descriptive of the same quality, as we find in the name of the Cape, which is “ Verde.” But Edrisi, as if in order to prevent our supposing he can be speaking of the Canaries, goes on and tells us that “ in this “ same climate,” (the first,) “ are the cities “ of Ulil, Salla, Toccrur, Dar, Berissa and “ Murra,”—and all these are in the Land “ Mirzatae Nigrorum.” But, the Canaries are *not* in the first climate*—moreover, Toccrur and Berissa, two of the towns named, are,—and they are known besides to be in the latitude of the Cape Verd Isles; and thus we have Edrisi’s authority for placing Ptolemy’s first meridian in the westernmost of the Cape Verd Islands; though it is to be regretted that Edrisi should have made the blunder of limiting

* It is not easy to say what different authors mean by the ill-defined term “ a climate.” The more ancient writers divided the northern hemisphere into seven climates—but no known division would place the Canaries within a first climate—I apprehend that the first climate of Edrisi extended from the Equator to the Tropic.

their number to two, but this is the way in which his work is written.

I am quite aware, and I shall soon have reason to complain, that Ptolemy is very wild in his latitudes occasionally, and that he commits great mistakes in laying down some of them: and it is not the least remarkable of his mistakes, that he is in error no less than ten degrees in the *latitude* of his own astronomical observatory at Alexandria;—not an error of the ancient transcriber or of the modern press,—but one which he has worked up and incorporated in many of his astronomical calculations. But, notwithstanding this, when Ptolemy fixes certain islands by name in a certain latitude, and we find islands in that latitude, we are bound to adopt them under the name given; and not to run after fanciful applications of that name to other places, according to our own notions: more particularly are we bound to do this, when we find that by adhering to what the author really does say, we relieve him from gross inconsistencies, and place, in the present instance, the geography

of Ptolemy on the basis of truth and of fact. Drawing, then, Ptolemy's first meridian through the westernmost of the Cape Verd Islands, instead of through Ferro, we at once find the mouth of the Salathus where Ptolemy says it is, in 9° East, — we render what he says about the Geir intelligible and possible, whereas, before, it was unintelligible and impossible to be true; and under these considerations and on these principles, I have not hesitated to reconstruct my Ptolemæan map, as I now give it in this work; although it has cost me much labour to reconsider and recalculate all that Ptolemy has said of the Geir and Ni-Geir, and of countries adjacent, after having arranged and considered the whole on the generally-received opinion that Ptolemy's first meridian was drawn through Ferro.

Having thus constructed my map, I have only just to remark, that the meridian of Greenwich will fall on 25° E. of Ptolemy; and that the 50th degree East of Ptolemy, under which two important points of the Geir lie, will correspond with 25° E.

from Greenwich. Thus, by adding or subtracting 25 degrees of longitude, as the case may be, the longitude of Ptolemy and that of Greenwich may be easily compared and adjusted.

I shall now proceed to give Ptolemy's own words, as the authority on which I have constructed my map, and on which words I rest my reasonings and analysis; and I shall accompany them with the closest and most exact translation I am able to make.

Ptolemy, after telling us that all the rivers between the Salathus and the Massa flow westward into the ocean, goes on to deal with the Geir and Ni-Geir, beginning with the Geir: but, before I go further, I will here remark, that his whole context and sense implies, in the most decided manner, the *easterly* course of the Ni-Geir from Mount Mandrus, where it rises; which range, Ptolemy tells us, pours also its waters from its *western* face into the Atlantic.

He then begins with the Geir, thus: "The greatest rivers," says he, "flow to-

“wards the midland parts—but the Geir,
 “joining Mount Usargola and the Pharanx
 “Garamantica, from *which*” * (direction or
 course?) “the river turning aside, makes,
 “according to observation, degrees, 42° E.
 “16° N.” This is the only translation, I
 will not call it *meaning*, I can give of Pto-
 lemy’s words, which are as follow—Πόλαμοι
 εν τη μεσογειῳ (query? μεσογαία) ρευσὶ μεγιστοί·
 ο τε Γεῖρ ο επιζευγνυων το τε Ουσαργαλα ορος, καί
 την φαράγμα Γαραμανλικην, ἀφ’ ου εκτραπεις ο πο-
 ταμος επεχει,

—κατὰ θεσιν μοιρας μ’β’. 15’.

The first difficulty is with the awkward
 word επιζευγνυων. What does Ptolemy mean
 by a river “*joining*” two places? The na-
 tural and obvious meaning is, that one
 could sail or row from one named place to
 the other; in which sense the Thames may
 be said “to join” Windsor and London.
 But, from what follows about the Ni-Geir,
 it appears that Ptolemy cannot be so rigid
 in his meaning, and that by the word
 επιζευγνυων nothing more is meant than that

* It will be seen immediately that the word “*which*”
 cannot refer to the Pharanx.

there is a continuous stream, no matter in what or how many directions, between the two places ; as is clearly the case between Mount Mandrus and Mount Thala—places which, he tells us, are “ joined ” by the Ni-Geir.* But there is another difficulty of which I confess I can make nothing, which is this: if we admit the above sense to the word ἐπιζευγνυων, “ joining,” there still remains the apparently insuperable difficulty of joining the two places which Ptolemy says are “ joined ” by the Geir, namely, Mount Usargola, and the Pharanx Garamantica; for Mount Usargola is assigned, as we shall see hereafter, as giving out one of the two northern branches of the Ni-Geir—Mount Usargola is, as I shall endeavour to show when I come to speak of the Ni-Geir, part of that range of hills which is above and to the north of the lake of Ghana, and which gives rise to the river Kowarrama of Sultan Bello, which flows

* If we take Ptolemy in this large sense, Mount Usargola may be said to join the Garamantica Pharanx through the Tchad; but this would be straining the thing to the very utmost.

westward till it falls into the Ni-Geir. Moreover, we know of no stream which flows S. E. from, or N. W. towards the spot where Ptolemy has placed Mount Usargola; but that is the direction in which a stream must flow in order to "join" Mount Usargola and the Pharanx Garamantica. But, even if such a stream did exist, it could "join" the two places in question, in the ordinary sense of that word, only by cutting through the line of the river, which I hope, by-and-by, to show flows from the lake 'Tchad into the Geir, or Nile of Bornou.* I must, therefore, give up this part of Ptolemy's account of the Geir in despair. I have tried in vain to make something out of what he says of a river which shall "join" the two named places, and I have not been more successful in my endeavours to make sense of the whole passage, which I suspect must have been falsified by some accident or want of care.

My next difficulty in this passage is with

* See not only what almost immediately follows on this point, but also Note 3, at the end of this volume,

the words *αφ' ου εκπαις ο πόλαμος*: the words *αφ' ου*, from their position in the sentence, would seem to refer to the Pharanx; but *φαργξ* is feminine, and *ου* is masculine or neuter, *ου* must therefore refer to something else; it cannot be to *ορος*, not only from the structure of the sentence, but because it would be contrary to all grammatical courtesy to pass over the *feminine* noun substantive, and make a relative agree with a *neuter* and more distant antecedent. *Ου* therefore remains without any visible antecedent, nor can I venture to suggest one, unless it be the word *τοπου*; but *τοπος* is no where before used, and the laws of language will hardly allow us thus to bring a word, not before on our roll, into our ranks by a forced conscription, merely because we think we want it: and after all, if this difficulty were surmounted, what can be made of the next member of the sentence, by which we are told that, “after turning aside, the river has, or “makes, 42° E. and 16° N.”? There is absolutely no sense to be made of this whole passage as applied to the Geir!

This is a bad beginning, but what follows will be, I hope, more satisfactory.

The next sentence in Ptolemy is, "which" (river) "makes the lakes Chelonidæ," (or of tortoises) "whose medium" "is in 49° E. 20° N." The original is, *ος ποιεῖ τὰς Χηλωνιδὰς Λιμνας, ὡν τε μέσον ἔχει μοίρας μ'θ'. κ'.*

The word *ποιεῖ* here implies that the river, or branch of it, flows through the lakes, or rather "forms" them; and it is the same word we shall find Ptolemy using when he describes the earliest western branch of the Niger flowing through, or "forming" the lake Nigrites. We have here the exact site of the lakes Chelonidæ given, and I have placed them accordingly in the map with the river running into and "forming" them; but as Ptolemy has not said one word as to what becomes of the Geir after passing through the lake, I have in the map broken off as he has done.

Ptolemy next says, "and it," (the river) "failing," (or disappearing) "as they say, "and being carried under ground, it gives "out or back another river," (in a contrary

direction) "of which the western extremity "is in 46° E. 16° N." But we must take the original words, one of which is remarkable: *ος και διαλιπων, ως φασι, και υπο γην ενεχθεις, αναδιδωσιν ετερον ποταμον, ου το μεν δυσμικον περας επεχει μ'ς'. 'ς'.* I allude to the word *αναδιδωσιν* as remarkable. The particle *ανα* in composition has a peculiar force, and implies an effect produced in a counter sense to what was produced before—*διδωμι* to give, *αναδιδωμι* to give back, *σπελλω* to send, *ανασπελλω*, to send back; so of *ανασρεφω* to turn back, and many others; in short, *ανα* in composition seems to imply a revulsion, or something contrary to or against the state preceding. Now, if this sense be admitted, the river which had been "carried," *ενεχθεις*, under ground, bursts forth again as another river, and its western boundary is, where I have placed it, in 46° E. 16° N., which will give a point in the line between the lake Tchad and the Nile of Bornou or Geir; through which point the waters would flow, if the Tchad ever had any communication with the Geir, or, in other words, with the Misselad and the Wad el Ghazel, or river of

Bornou, which I shall endeavour by-and-by to show that the Geir was.

The Tchad I placed at once in its proper latitude and longitude, according to Denham and Clapperton, in order to see what would become of it amidst Ptolemy's geographical conditions and dicta; for, as we are pretty sure about the existence and actual site of the Tchad, I wished to put Ptolemy to this *experimentum crucis*, and he has stood it well.

Now, the Sheikh Hamed told Major Denham very distinctly, that formerly the Tchad did empty itself into the river of Bornou, or Wad el Ghazel "by a stream."* Supposing this stream, or the channel of it, now to be traced, it would, as I have already stated, pass over Ptolemy's longitude of 46° E. and 16° N. latitude; and by this, the Niger would join the Nile of Bornou. I have marked this direction by a dotted line from the *centre* of the Tchad,

* What follows refers to the map called the "Out-line of Central Africa." The text will always indicate pretty clearly to which of the two maps reference is made.

—for, it is the *centre* only of the Tchad I have represented by a small circle; and Major Denham has also marked the course of a “dry river” out of the Tchad, near the eastern extremity, on information obtained on the spot. This seems conclusive; but, supposing the Tchad and the adjacent lakes or marshes of Wangara to extend in the rainy season to the east, as far as the lakes or marshes of Wangara are made to extend in most maps,—we shall have the eastern edge* of this accumulation of water, which in fact would be only an enlargement of the Tchad, reaching to the very spot

* Sheikh Hamed’s grandfather talked of the immense extent of the Tchad *formerly* to the eastward, but said that it dried up *miraculously*, after the killing of a certain “holy man” in the neighbourhood.

Now, although in England we shall not be much disposed to admit the cause, the fact of gradual desiccation seems pretty well established, and, as the quantity of water brought down by the Niger annually is assuredly not diminished of late years, unless we suppose a change in the whole order of nature within the tropics, this drying-up of a lake to the *east*, can be accounted for only by supposing an extension of that lake to the *west*, by the process I have described lower down. See also the next note.

given by Ptolemy as the western boundary (he does not say whether its beginning or ending) of the *new* river, which he fabulously seems to attribute to the resurrection of the other river which had disappeared in the lakes Chelonidæ. This western boundary is in 46° E., from this deduct 25° , to reduce it to the longitude of Greenwich, and we shall have 21° E. But the eastern extremity of the Tchad, is carried by Denham as far as about $17^{\circ} 10'$ E. and to the eastward he ventures to give only a dotted line as a *supposed* boundary; but this brings the Tchad *itself* within less than *four* degrees of this new river,—but, the marshes of Wangara,*

* I am aware that the existence of this lake or marsh is disputed, and, that the name “Wangara” in the negro language is supposed to signify a place where gold was found. There are many Wangaras in Central Africa, and, any lake near one of them might easily be called the lake of *the* Wangara.

As to its non-existence, every thing we know of the Tchad implies that it once was much more extended than it now is, towards *the east*. Sheikh Hamed told Major Denham that he had heard his grandfather say that “the Tchad formerly emptied itself into the Wad

in all the maps that give them, are made to extend to full 21° E., that is, quite as far as the 46° E. of Ptolemy ; and, if any reliance can be placed on the maps which we have, the marshes of Wangara and the Tchad are connected, and probably in the

“ el Ghazel, by a large stream,” and that the Tchad, in that direction “wasted itself in an immense swamp.”

My opinion is, that the Tchad is working upwards against the stream, in the manner described further on, and if so, it will necessarily leave behind it a marshy space; and, I can quite conceive that the lake now called the Tchad, from all the accounts we have, did once extend to 46° E. of Ptolemy, that is to 21° E. of Greenwich, or about 250 miles farther down the river than it now does, indeed one account says that it extended once 300 miles down the river.

In addition to the above, Jackson tells us in his travels, (a work which has by no means been duly appreciated,) that certain merchants of whom he speaks “ met “ with three considerable cataracts, the principal one of “ which was at the entrance of lake Wangara, here “ also they transported the boat by land, until passing “ the waterfall they floated it again in an *immense lake*, “ whose opposite shore was not visible.” Here then is an “ immense lake,” beyond the spot we see assigned in the maps to the Wangara marshes, or, at all events to the Tchad, all which tends to make the Tchad communicate with the Wad el Ghazel, or Nile of Bornou.

rainy season, form one and the same immense lake. But, the following dialogue between Capt. Clapperton and the King of Boussa is important, if any reliance is to be placed on information received from natives. Capt. Clapperton asked the Sultan, at what place the river Quolla entered *the sea*—Capt. Clapperton meant the Atlantic. The Sultan, taking the word “Bahr,” (which was no doubt the word used by Capt. Clapperton) in the sense in which it is quite as frequently used as to imply the ocean, replied, that, “he did not himself know, but that he had heard people say “it went to Beni, which is the name given “to Bornou.” Now, it is quite clear that Capt. Clapperton and the Sultan were at cross purposes about the word sea or “Bahr.” The European traveller meaning the ocean, and the African Sultan meaning a large river or lake, for, at Beni or Bornou there is no ocean, but in Bornou there is a large and wide river to which no doubt the Sultan’s answers pointed; in regard to the drift of Capt. Clapperton’s question, I have shown, I hope, in the subsequent part of

this dissertation, the untenableness of the opinion, that the Quolla entered the Atlantic either at the Bight of Benin, or by the Congo.

The next sentence is, “ the easternmost “ boundary of the river Geir, includes lake Nuba, whose position is 50° E. and 16° N.: τοδε αναβολικον (subaudi περας ?) τε ποταμὸς ποιεῖ τὴν Νεβα Λιμνὴν, ης θείσεις, ν' ἑε. Now this is very near the position of the lake Fittre, which is put down in exactly the same latitude, and, in longitude $22^{\circ} 30'$ E. of Greenwich, in Cary's last map; showing a difference of only $2^{\circ} 30'$ of longitude, which is not so considerable as to be at all irreconcilable with lake Fittre, and lake Nuba being one and the same.

It only remains for me to put down the Garamantica Pharanx, which Ptolemy places in 50° E. 10° N. which, I shall now endeavour to show, corresponds pretty nearly with the copper mines of Fertit, near which the river Misselad, or upper branch of the Bornou Nile is said to have its rise.

The first thing to be considered is, what did

Ptolemy mean by the rather unusual word *φαραγξ*? Montanus translates it “Vallis,” a meaning which I believe the word hardly ever can have; *φαραγξ* means a chasm, a precipice, a place broken and uneven. In these senses the word is used by Euripides, and we find Plutarch and Thucydides using it in the sense of “Barathrum”—“Præceps” “locus”—while Aristotle expresses a place having rents and openings in the earth, by the word *φαραγγωδης*. I consider the word here used, (and used nowhere else by Ptolemy,) to imply some forcible opening, such as the working of a mine, or some such broken precipitous place; and, in fact, we find the site, as given by Ptolemy, namely, 50° E. 10° N. corresponding closely with that given to the copper mines of Fertit,—which are placed according to some authorities in 24° E. of Greenwich, which is 49° E. of Ptolemy, and by others, in 27° E., or 52° of Ptolemy, and 9° N. The mean of the two longitudes being pretty nearly what Ptolemy gives for the Pharanx, namely, 50° E. Thus then we find the Garamantica Pharanx or southern source

of the Geir just where we find the source of the Misselad or Nile of Bornou, that is, about one degree north of the copper mines of Fertit,—the latitudes quite agree. This coincidence seems striking, and satisfactory, but, before I admitted it, I sifted the matter well, and looked on all sides for objections, fearing I might have been misled by my desire to find, what I hope I have found.

Farther on we discover the lake Nuba in the very line of the Misselad;—but lake Nuba coincides pretty nearly with lake Fittre; for lake Nuba is in 50° E. of Ptolemy and 15° N., and lake Fittre is in $22^{\circ} 30'$ E. of Greenwich,—which is equal to $47^{\circ} 30'$ E. of Ptolemy, and 16° N.—a proximity sufficient to justify, as I have before said, the conclusion that they are the same, particularly as no lake but Fittre is known or said to exist within several hundred miles of the place. The Misselad then, that is the Geir, flows from the mines of Fertit, that is from the Pharanx Garamantica, into the lake Fittre, or Nuba; now, besides what we know of the Nile of Bor-

nou from other sources, Sheikh Hamed told Major Denham that the "lake Fittre" had a river running into it, and out of "it;" "that the river which ran into it, came from the southward, and the westward." This westing must have been some turn in the stream near the lake, as the general course of the Misselad is North and South—and, the Sheikh further said "that this river formed the lake." I have assumed this to be the Misselad, because it is pretty well ascertained that that stream does enter the Fittre from the southward, and I have no doubt but that the Sheikh was speaking of it; it is only to be regretted that Major Denham did not ask the names of those rivers: however, the Sheikh goes on confirming the above assumption, for he added, as Major Denham gives his words, that "these streams and the Nile were the same." Here we have the old error reproduced by the definite article prefixed to the word "Nile," and Major Denham came at once to the conclusion that the Sheikh spoke of the Nile of Egypt, when it is pretty clear that he could be

speaking only of the Nile of Bornou; and the amount of his real expression probably was “that these streams then”—that is, after forming and passing through lake Fit-tre, “formed a Nile,” or a deep and large river. It thus appears then, if the above statements and reasonings be correct, that the Geir of Ptolemy, issuing from the Garamantica Pharanx, on one of whose branches (εκτροπας) he places lake Nuba, is the same river, so far, as the modern Misselad. I am aware that this has been *asserted* before, and the Misselad has been named the *Ghir* (as it has been written) of Ptolemy; but this was mere assertion, without any sort of proof. That proof I have now endeavoured to give, but I never could have given it, had I not gone to Ptolemy’s original text,—and, had I not further, by rectifying his first meridian, which had been drawn for him, but not by him, through Ferro, extricated the greater part of the course of the Geir from the bed of the Egyptian Nile, into which that meridian inevitably plunged it, as well as lake Nuba.

Next comes the lake of Domboo, which geographers have agreed to consider as the lakes *Chelonidæ* of Ptolemy—in which opinion I perfectly coincide. I call them lakes, on account of the plural substantive used in the Greek; but, the plural used by Ptolemy, referred perhaps rather to the tortoises which frequented the lake, than to “the lakes” or lake itself—for there is but one.

Ptolemy lays the *Chelonidæ* down in 49° E. 20° N.; but 49° E. of Ptolemy is equal to 24° E. of Greenwich,—and the lake Domboo is laid down in maps, generally, in longitude 22° E. of Greenwich—a discrepancy by no means sufficiently great to destroy the identity of the two lakes; particularly as there is no other lake nearer than the Nuba or Fittre, which has the whole length of the kingdom of Bornou interjacent between it and lake Domboo, to say nothing of the universal consent by which the lakes Domboo and *Chelonidæ* have been identified. There is the same amount of difference in the latitudes, as

far as the authority of modern maps goes, —Dombou being laid down in 22° N.

But Ptolemy distinctly tells us, that the Geir ran into the Chelonidæ, and all the accounts and maps we have, conduct the river or Nile of Bornou either into lake Dombou, or to some spot close to and beyond it, and there leave it off abruptly. I think therefore that I have pretty clearly traced the Geir from the Garamantica Pharanx into the Chelonidæ, in such a manner as to identify it with the Misselad, and its continuation the Wad el Ghazel, or Nile of Bornou.

But, the Geir of Ptolemy has a western branch. I hope that I have shown the probability, if not quite the certainty, that that western branch must be the same as the stream flowing out of the Tchad into the Wad el Ghazel or Bornou Nile, of which Sheikh Hamed spoke so distinctly to Major Denham.

If then the Geir and the Nile of Bornou, have now been shown to be the same, I claim that they be so considered on the

grounds I have laid down, and not on the dicta or maps of others, in which we find the geography of Ptolemy fearfully distorted, and an error of enormous magnitude diffused over every map of Northern and Central Africa compiled with a view to this subject, *by the drawing of Ptolemy's first meridian, no less than seven degrees farther east than he himself established it.*

The inquiry I shall now enter on is one of difficulty and delicacy, and in that inquiry great care should be taken not to indulge in theory or speculation further than is absolutely necessary; that is, only where facts are absolutely wanting on which to proceed. The inquiry I allude to is this,—what becomes of the Geir or Nile of Bornou, *after* it is lodged in the lake Dombou? Ptolemy here, or hereabouts, leaves us, only he leaves us with the word *ποισι*, which will carry us a little, and but a little, further. I have before remarked, that where Ptolemy uses this word in regard to a stream and a lake, as, for instance, in regard to Lake Nigrites, to which we are coming, he means, as the

word indeed seems to imply, that in its course the stream *forms* the lake, and then passes on. I have accordingly represented the stream as issuing from the lake; but as Ptolemy is silent on its course beyond the lake, I am constrained to dispose of it speedily in the desert of Bilmah, where all the accounts we have tell us the Nile of Bornou ends in sands. Dr. Setzen, who is one of the most respectable authorities we have on this subject, says expressly that the river of Bornou runs from the south to the north, and then is lost in the sands of Bilmah; a fate described indeed by Ptolemy by the words *ὅς καὶ διαλείπων*, and by *ὑπο γῆν ἐνεχθεῖς*.

To cut short the question in this way, and thus to annihilate the course of such a body of water as the Nile of Bornou, might do very well in the time of Ptolemy, when geography was neither so accurate nor so philosophical a study as it is now; but I confess I cannot bring myself to think that a mighty stream, such as I conceive the Nile of Bornou to be, when formed by the united streams of the Niger and Misselad,

can be so disposed of in a sandy desert, without ever reappearing in any shape. We must recollect not only the quantity of water brought down by the Misselad, but the overflowing of the Niger in the rainy season for months together, by Sheikh Hamed's channel from the Tchad, and which so closely coincides with Ptolemy's western branch of the Geir;—and we must not forget that all the accounts we have of the Nile of Bornou represent it as a most magnificent river, covered with decked boats, and far exceeding the Niger in volume, as indeed it naturally must, if the Misselad and Niger do unite, as I have partly shown, and shall show them I hope clearly to do, to form this noble river. I cannot but think that such a powerful stream as this *must* have an outlet somewhere *beyond* the sands of Bilmah. The sands of Africa, many of which I have traversed, are generally siliceous : but silix, whether comminuted or in a mass, is not an absorbent—it is not a thirsty or retaining substance. If, indeed, the desert of Bilmah were shown to be made of commi-

nuted chalk, I could conceive a good large river to be drunk up and lost, until the whole desert announced what was become of the fluid, by being converted into one general pulp; to effect which I can suppose, taking the immense surface exposed to a tropical sun, and from which the evaporation would be prodigious, it would require perhaps ages on ages. But water flowing into a siliceous sand will act just as freely, and in the same manner, or nearly so, as if there were no sand, except only that its rate of going would suffer a small retardation from friction. It would push on by the force of gravitation till it found its natural level, without any loss by absorption, for silex does not absorb—with little or no evaporation, covered as the water would be by superjacent sand—and with little other loss than the amount of the fluid which might be stopped or dissipated in one way or another by its adherence to the millions of particles through which it would travel, in its journey in search of a level. But this amount could not be great after the first humectation,

for each particle of sand coming in contact with the fluid, having taken up mechanically as much as it could sustain, no addition could be made to that quantity; —and the several grains of sand being once loaded to the amount of their power of attraction, would refuse to take more, and the fluid thenceforward would pass on undiminished. But what is, or can be, the level towards which I suppose this mighty body of water to be gravitating? I say at once THE SEA, towards which all rivers tend in one way or another.

I need hardly add, that the sea to which I look as the receptacle of the Nile of Bornou is the Mediterranean, towards which it tends, from its first exit from near the mines of Fertit; and I at once put my finger on the quicksands of the gulph of Sidra, the ancient Syrtis, as the point at which the Nile of Bornou enters the sea, which, by meeting the stream on a low flat shore, drives back or stops the waters of the river, so that they can flow on no farther; they therefore, having *now* no lower level to go to, form *what they would*

equally have formed in the middle of the sandy desert, had they been dammed up there; namely, a plashy, moving quicksand, which extends towards the land as far as the level will admit, and is stopped only by the gradual rise of the ground. In a word, the size and form of the quicksand adjacent to the coast implies what Tuckey tells us in his Maritime Geography, that the coast is very low, or, in a word, that the waters of a river and of the sea would be there nearly on a level; one having sometimes the mastery and sometimes the other. Solinus describes the Syrtes much in this way:—“Syrtes quas inaccessas vadosum ac reciprocum mare efficit.” The “vadosum mare” united to the word “reciprocum,” seems to imply also a “vadosa terra.”—Solinus goes on and describes, after Varro, the earth as being there “perflabilem ibi terram, ventis penetrantibus, subitam vhm spiritus citissimi aut revomere maria, aut resorbere.” This is just the effect I should suppose would be produced by a river emerging from sands meeting with the sea on a level with itself; indeed, the de-

scription is complete, and the words “*per-flabilem*” and “*revomere maria aut resorbere*” are highly graphic.

I have declared my opinion against the possibility of the *absorption* of such a flowing body of water as the one we are speaking of, in a desert of siliceous sand; and I have shown that, covered up as it is, it cannot *evaporate*. But if it be neither absorbed nor evaporated, it must either force its way into evidence above ground in the form of a lake or an inland quicksand,—which we know it does not do—or it must, travel farther on till it meets at some point with a level which checks it—and that point I indicate in the Gulph of Sidra, for the following reasons :

First, it is in the direct prolongation of the general course of the Nile of Bornou : secondly, it is the nearest point at which a river, disappearing where this river is said to disappear, in the deserts of Bilmah, could reach the sea: and, thirdly, the very phenomenon which I have contended would occur if the river were any where dammed up in its passage, actually does occur in

the very line between the Lake Dombou and the Syrtis, if any reliance can be placed on the maps we have, near the rock Tibboo, where water suddenly appears under the name of the "Two Rivers,"—caused, in my opinion, by the damming up of the subarenaceous stream by the ground rising in the vicinity of the Tiberti mountains, which are not very far off, but which appear to be much broken and disconnected in these parts,—although still presenting an obstacle sufficient to make the river declare itself,—but having surmounted which, the stream sinks, as before, into the sands, and travels onwards to the sea.

But reasoning from analogy, and still more from what we know of the nature of the country of which I am now more immediately speaking, I have no doubt but that, in very remote ages, the united Niger and Geir, that is the Nile of Bornou, did roll into the Sea, in all the magnificence of a mighty stream, forming a grand æstuary or harbour where now the quicksand is: indeed, we find in Herodotus vestiges of

a tradition that the Niger, or Nile as he calls it, made its way to the Mediteranean; although the historian infers, or some of his transcribers have made him infer that it does so through the Nile of Egypt. The question to be solved under such a supposition is, what revolution in nature can have produced so great a change in the face of the country, as to cause a great river which once flowed into the sea, to stop short in a desart of sand. I will submit the following facts and my reflections on them, as the solution of this question.

We know from all recent, as well as from some of the older modern travellers, that the sands of those desarts which lie to the westward of Egypt are encroaching on and narrowing, by a constant and irresistible inroad, the valley of the Nile of Egypt. We see the pyramids gradually diminishing in height, particularly on their western sides, and we read of towns and villages which have been buried in the desart, but which once stood in fertile soils, some of whose minarets were still visible a few years ago,

attesting the powers of the invading sand. The sphynx buried almost up to the head, till the French cleared her down to the back, attested equally the desolating progress of this mighty sand flood ;—an evil, however, not quite confined to the East, for it is known even in the most refined and cultivated parts of Western Europe. I have seen its inroads in the neighbourhood of Bayonne and Bordeaux, where it is still at work, and where its palsyng effects are spoken of with dread by the inhabitants. Pennant too, tells us that he has seen “ more than once, on the east “ coasts of Scotland, the calamitous state “ of several extensive tracts formerly in a “ most flourishing condition, at present “ covered with sands, unstable as the deserts of Arabia.”

The parish of Fyvie, in Aberdeenshire has by these means been reduced to two farms, the buildings being all buried in sand, and a vestige of the church only remaining. Near Forres is another instance, so that we need not go far to see the operation of this terrible agent on com-

paratively a small scale,* and, if we turn to the valley of the Nile of Egypt, we shall see at this moment the very process going on by which the lower part of the Niger, or Nile of Bornou has been choked up and obliterated by the invasion of the Great Sahara, under the names of the Desarts of Bilmah and Libya. Thus has been rubbed out from the face of the earth a river which had once its cities, its sages, its warriors, its works of art, and its inundations like the classic Nile; but which so existed in days of which we have scarcely a record. Herodotus, indeed, in his Melpomene, seems clearly to imply that some terrible catastrophe of this nature had taken place in former times, in the countries adjacent to the lower parts of the Nile of Bornou,

* The only remedy known, capable of checking this evil is the planting of the *bent-star* or *mat-grass*, the "*Arundo arenaria*" of Linnæus, in extensive double and treble lines, the roots of which will then creep and mat together in such a way as to form gradually hillocks, and then hills of stable sand, which oppose a barrier to the enemy advancing from behind,—but this is a process beyond the foresight and efforts of the present inhabitants of the valley of Egypt.

and in regard to that river itself. He says, "The Psylli were the next people to the Nasamones, inhabiting a country within the Syrtis, destitute of springs; and, when the wind had dried up all their reservoirs of water," (no doubt by filling them up with drifting sand) "the Psylli consulted together and determined to make war on the wind,* I only repeat," says Herodotus, "what the Libyans say—and, after they had arrived at the sands, the wind blowing hard, *buried them alive*, and then it was that the Nasamones took possession of their country." This is, indeed, a plain description of the advance of the sand flood, and of the giant desert treading down into death a fruitful country, with all its inhabitants!

The destruction of all the water is ex-

* This means only that they staid in the country, and tried to counteract the effects of the wind, instead of flying before it and quitting the place. The cause of the prevalence of *westerly* winds in the vicinity of the tropics, and for some degrees beyond them, is now sufficiently understood. Their action on the Great Sahara is pretty constant.

pressly mentioned. These people had no springs, he says, and therefore may be supposed to have made reservoirs for use, and to have trusted to the inundation for the fertility of *their* Egypt. The river having lost its valley, would be gradually invaded and filled up by countless, by inconceivably countless clouds of sand, each cloud containing again countless and inconceivable myriads of grains of sand, till at length the bed of the stream itself, however mighty, having been filled up by an operation which may have taken ages in its completion, the country, or rather what was the country, under an entirely new face, but which face could be no farther deformed, was taken possession of by the Nasamones, who became, as Herodotus and others relate, the relentless plunderers of any ships which happened to be entangled in the newly-formed and treacherous Syrtis! *

In the same way shall perish the Nile

* ——— “ Sic cum toto commercia mundo,
“ Naufragiis Nasamones habent.”

Lucan, lib. ix. v. 443.

of Egypt and its valley ! its pyramids, its temples, and its cities ! The Delta shall become a plashy quicksand—a second Syrtis ! and the Nile shall cease to exist from the Lower Cataract downwards, for this is about the measure or height of the giant principle of destruction already treading on the Egyptian valley, and who is advancing from the Libyan Desert, backed by other deserts whose names and numbers we do not even know, but which we have endeavoured to class under the ill-defined denomination of Sahara,—advancing, I repeat, to the annihilation of Egypt and all her glories with the silence, but with the certainty too, of all-devouring time !

There is something quite appalling in the bare contemplation of this inexorable onward march of wholesale death to kingdoms, to mighty rivers, and to nations ; the more so, when we reflect that the destruction must, from its nature, be not only complete, but *eternal*, on the spot on which it falls !

We have, however, in these our days, a broad and inextinguishable flood of light,

breaking in on this death-like gloom. The genius of expiring Egypt may point to the *Press*, and say, “Non omnis moriar;” for, until some *universal* and complete change shall take place in this globe, the records of Egypt and her glories shall be preserved, shall be embalmed, by a far more durable art than any the Egyptians ever possessed—the Art of Printing. That giver of immortality, (as far as such a word can apply to anything connected with man on this side of the grave,) the Press, has produced, in almost countless forms and languages, from Labrador to Cape Horn, from Lapland to New Zealand, all that ancient and often solitary manuscripts, perishable in their nature, and trembling, as it were, under their trusts, have brought down to us of the renowned land of the Pharaohs; while modern accounts, multiplied almost without end, will convey to the remotest posterity in the completest, the minutest, and the most graphic manner, a knowledge of what Egypt now is and has been for several centuries past. The glory of him who, pointing to the

Pyramids, told his victorious bands, "to recollect that from their summits forty centuries were looking down on them," shall also descend to imperishable renown in the narratives of all late and of all future writers of the history of modern Egypt; but this glory will now go down dimmed, eclipsed by the brighter star of Wellington; and thus, when all that we now admire and venerate in that classic country shall be irretrievably obliterated by the tremendous footstep of a destroying principle, the name of the great conqueror at the Pyramids shall survive those Pyramids themselves, by the instrumentality of the frail, though infinitely reproducible material on which this record of his glory is now here traced; but the same art which gives immortality to the only once defeated Napoleon will confer it as imperishably on his great, and always successful, conqueror at Waterloo!

It is time, however, to pursue the course of the Ni-Geir, having gone through all that Ptolemy has said about the Geir; and, in that pursuit I hope to show, what

I have before touched on, that the Ni-Geir enters the river of Bornou, or the Geir, somewhere to the southward of the 16th degree of north latitude, by a branch which has been distinctly spoken of, though not very clearly defined by Ptolemy, the existence of which has been frequently alluded to by Arabian writers, and which was so expressly declared to be a fact of notoriety by Sheikh Hamed to Major Denham. Indeed, a glance at a map would bring us to the conclusion that a great river, rising in Mauritania, and running east through 25 degrees of longitude, when we now know that it enters a lake, the Tchad, would naturally, and must naturally force onward beyond that lake and its precincts, when a few degrees more would bring it in conjunction with another river, crossing its course in the way the Nile of Bornou does. I do not say that because a thing seems probable and natural on a bare inspection of a map, that it *must* be so; I only contend that, *primâ facie*, we are disposed to adopt that opinion, and it becomes my business now to adduce reasons to show that it is a sound one.

I have already gone over the grounds on which I have rectified Ptolemy's longitude, by getting rid of an error of seven degrees. I only wish I could also get rid of an error, nearly as great, which I find in several of his latitudes; but that is beyond my power. I can lay down no general rule on this subject, and I must deal with each case as it occurs in the best manner I can.

Some of Ptolemy's latitudes are right, and have been confirmed by modern discoveries, particularly about the Geir; but, when he places Mount Mandrus, one of the sources of the Ni-Geir, in 19° North, he must be egregiously in error, both because that would throw the Mandingo Mountains, in which the Niger rises, a great way up into the Great Desert, where there are, and can be no rivers, but also because it is now well known that the general course of the Ni-Geir, that is, Park's Joliba or Quorra, is full 6 degrees and a half to the Southward of 19° North. But, although the error here amounts to $6\frac{1}{2}$ degrees, his other erroneous latitudes

do not require correction to that amount; for instance, although he appears to me to be very much out in his latitude of Mount Usargola, which I take to be the range of hills above the Lake of Ghana, and the sources of Sultan Bello's river, Kowarrama, yet he is right in his latitude of the Libyan Lake, if that Lake be, as I suppose it to be, the Lake of Ghana. With these preliminary remarks, and stating that I have left all Ptolemy's latitudes, except one, undisturbed in the map I have constructed after him, as I had no general canon by which I could rectify them, and as I began with the resolution not to take the slightest liberty with Ptolemy's text, I shall go on with my analysis of what that geographer says of the Ni-Geir.

After telling us that the rivers which rise in the western face of Mount Mandrus, between the Salathus and the Massa, run into the ocean, he begins with the Geir, with which we have just done, and he then proceeds to the Ni-Geir.

He says, "and the Ni-Geir river joining Mount Mandrus and Mount Thala, it makes the Lake Nigrites, whose posi-

“tion is in longitude 15° E.” (which corresponds with 10° W. of Greenwich,) “and 18° N.; and towards the north it has “two branches, upon Mount Sagapola and “Mount Usargola; towards the east it has “one branch on which is” (or which *makes*) “the Libyan Lake, whose position is 35° “E.” (equal to 10° E.* of Greenwich,) “and $16^{\circ} 30'$ N. To the south, one branch or “source above the river Daras, according “to two positions taken, which are 26° E. 17° N., or 24° E. 17° N.” of which the medium is 25° E., which corresponds with the meridian of Greenwich; and this is all that Ptolemy says of the Ni-Geir.

The mountains he names as connected with the Ni-Geir, he places as follows:

Mount Mandrus (medium of)	in 14° E. 19° N. $\iota\delta'. \iota\theta'.$
Mount Sagapola (ditto) . . .	in 13° E. 22° N. $\iota\gamma'. \kappa'\beta'.$
Mount Usargola (ditto) . . .	in 33° E. 20° N. $\kappa'\gamma'. \kappa'.$
Mount Thala . . (ditto) . . .	in 38° E. 10° N. $\kappa'\eta'. \iota.$

* If our modern accounts of the longitude of the Lake of Ghana, the Libya Palus of Ptolemy, be correct, and if his longitude was so too, that lake will afford an exemplification of the process described, p. 78, by which lakes formed on the courses of rivers shift their places. The Lake of Ghana has worked upwards.

And these mountains I have represented in the map by a small circle, indicating their medium, placing it exactly in the latitudes and longitudes above given.

I will now give Ptolemy's own words, that they may be compared with the version I have given of them:—και ο Νίγειρ ποταμος επιζευγνυστων και αυλος το τε Μανδρον και το Θαλα ορος, ποιει δε ουλος την τε Νιγριλην Λιμνην, ης δεσις, ιε'. ιη'—και προς μεν Αρκιης εκτροπας δυο επι τε το Σαγαπολα ορος, και επι το Ουσαργαλα ορος, προς Ανατολας τε εκτροπην μιαν, εφ' ης Λιμνην Λιβυην, ης δεσις λ'ε'. ις'—προς μεσημβριανδε εκτροπην μιαν, επι τον Δαραδα ποταμον, κατα δυο δεσεις, κ'ς'. ις' και κ'δ'. ις'.

The first difficulty we meet with is the same as we had before with the Geir, which is the expression επιζευγνυστων, a river *joining* two mountains; and I can here affix to it no other meaning than I have done before, namely, that it implies that the stream exists or flows between the two mountains, without reference to its course, about which Ptolemy says nothing farther than that “the largest rivers flow towards “the midland parts;” consequently, in placing one source of the Ni-Geir at Mount Mandrus, and another at Mount Thala, which is the only meaning I can arrive at,

these streams must flow towards each other until they arrive at and meet in some "midland part." We will, however, for the present, leave these two mountains where I have laid them down, after Ptolemy, and go on with the development of his geography, without attempting to join these two mountains by the river, till we have more data to go on.

The river next "makes," *ποιεῖ*, the Lake Nigrites, which Ptolemy lays down in 15° E. and 18° N., where I have placed it. Of the latitude, which is evidently very wrong for the reasons I have above stated, I will say no more; but the longitude of this lake, which we are to suppose must have been near the source, corresponds pretty nearly with our actual knowledge, as far as it goes, of the sources of Park's Niger, which are generally placed somewhere about 10 W. of Greenwich, which corresponds with Ptolemy's 15° E. As to the lake itself, there may or may not be one there now; and I will take this opportunity of remarking generally, that exactitude or coincidence in the places of these

lakes or fluvial aneurisms, is not to be expected after a lapse of years. Like the physical aneurism, they may sometimes be taken up again into the circulation, and so disappear—a violent flood may bear them bodily *onwards* for two or three degrees,—or, if left to themselves, undisturbed, their natural, and indeed practical mode of operation, is to extend themselves *upwards*, *against* the stream, if there be anything like a fall *into* them,—or to destroy themselves if there be anything like a fall *out* of them. In the first supposed of the two latter cases, a river tumbling over a ledge of rocks *into* a lake, will, by its constant action, wear away these rocks, and, by so doing, force them, as it were, farther off and up the stream ; while the lake will of course extend itself over the vacant space left by the worn-out ledge. This process we see going on on a grand scale in the falls of Niagara,* the ledge of rocks

* While these sheets are going through the press, accounts have arrived of the downfall of an immense rock out of the Niagara ledge into the basin below. This is a step *upwards*.

which causes that fall being known to be now a very considerable distance *higher up* the river than when we first became acquainted with that country. This process will go on, probably, till the bed of the river is worn down lower than that of the Lake Erie, out of which it flows, when a fall must in consequence take place out of the lower edge of that lake; and then will commence the other operations of which I have spoken, namely, the lake will destroy itself by wearing away its retaining ledge, till all the waters in it shall be carried off, leaving only the natural channel of the stream flowing through an immense valley, which once was a lake. In this way river lakes may and do change their places in the course of ages; and this consideration may serve to reconcile some of the discrepancies of Ptolemy's positions of lakes, when compared with what is now known; particularly if we bear in mind that the Alexandrian geographer wrote above seventeen hundred years ago—a period quite sufficient to produce considerable changes in the state and configu-

ration of a river, which is acted upon, too, annually by tropical rains.

In regard to Mount Mandrus, I have no hesitation to pronounce it to be part of the Mandingo mountains, both from position and name. As to the name, the addition of a single letter, and calling them Mandringo mountains, would make the nominal cognation complete.

Mount Sagapola, which Ptolemy places erroneously in lat. 22° N., that is, high up in the great desert, was no doubt part of Mount Mandrus, and furnished one of the north-western sources of the Niger, according to Ptolemy's notion of their situation.

But the Usargola source Ptolemy lays down in lat. 20° , which must also be an error; for that would carry both mountain and stream far into the Sahara, as has been remarked of Mounts Mandrus and Sagapola. The longitude he gives to the medium of Mount Usargola is 33° E. which corresponds with 8° E. of Greenwich,—now, this is very near the longitude of the range in which the sources of Sultan Bello's

river Kowarrama are placed, namely, about 9° E. in Capt. Clapperton's map. I think then that I may safely place the sources of the Kowarrama in Mount Usargola, and thus the northern branch of Ptolemy's Ni-Geir will be identical with that river. I have accordingly drawn in my map the northern branch, of whose direction Ptolemy says nothing, so as to make it rise in Mount Usargola, and unite with Park's and Denham's Niger, at the point where it is now ascertained the Kowarrama does so unite, namely, in $5^{\circ} 30'$ E. of Greenwich, and in 12° N.*

But this point of junction, if any reliance is to be placed on the recent discoveries, fixes a point in the course of the Niger, as well as the end of the Kowarrama; and, to this point I will now conduct the Ni-Geir, which I had left waiting at the lake Nigrites, until I should be provided with farther data,—in the absence of all information from Ptolemy as to the course the Ni-Geir took from the lake Nigrites; but the course I

* See Map to Clapperton's last journey.

now give it fulfils the only condition prescribed by the geographer, namely, that the Ni-Geir should flow towards the *μεσο-γαια* or "midland parts," and, at this point of junction with the Kowarrama, the Ni-Geir of Ptolemy must wait till some farther guide for its course can be discovered in what follows.

The next thing Ptolemy tells us is, that towards the east is a branch which "*makes, or forms,*" as I understand him, the "Libyan lake." The words *Λιμνην Λιβυην* it is to be observed are in the accusative case, and are not construable in the sentence unless we suppose some governing verb to be understood; and, that verb I conceive to be *ποιει*, the same word as was used above in regard to the lake Nigrites. Ptolemy places the Libyan lake in 35° E. 16° $30'$ N., which is equivalent to 10° E. of Greenwich. Now the city of Kano or Ghano, is laid down by Clapperton in 9° $45'$ E. which is within 15 miles of Ptolemy's lake, and which lies not far from the city from which it takes its name: but, if we take 4 or 5 degrees off Ptolemy's evidently

wrong latitude as given to Mount Usargola, and bring down that mountain and its *northern* source of the Niger to where it ought to be, and then take the *eastern* source now mentioned, and draw the two streams in the map towards a common point in the Niger,—we shall find they will speedily coincide, and turn out to be, what I have no doubt they were, the two (or more) streams now known to rise above and about the lake of Ghana, and in the adjacent range of mountains, and which form Sultan Bello's river.

Here then we have, what has puzzled Edrisi and all those who have followed him, an *eastern* source of the Niger, whose stream must run more or less to the westward to comply with its denomination, namely, “an *eastern* source,” which word must be used *relatively* to its future course towards the *μεσογαια*:—Ptolemy says nothing about this course, but, I think that I have shown sufficiently that it *must* be *westerly* by inference.

Ptolemy goes on and says, “towards the “south there is one branch or source above

“or on the river Daras— $\epsilon\pi\iota$:—which source
 “is, according to the mean of two observa-
 “tions before given, 25° E. and 17° N.”

Now, 25° E. corresponds exactly with the meridian of Greenwich; but, the latitude must be wrong, for, any source of the Ni-Geir in 17° N., so far from being a *southern* source of that river, would be several degrees to the *northward* of its whole general course,—and, indeed 17° N. is within the limit of the great desert; I am constrained therefore to suppose that the transcriber of some MS. must have mistaken some splash of a pen which had fallen before the Greek numeral ζ', or 7, for the Greek numeral ι' or 10, and, that in copying, instead of writing, as he ought to have done, the $\theta\epsilon\tau\iota\varsigma$ to be ζ' or 7, he wrote ιζ' or 17. This *one* latitude of Ptolemy I have therefore altered in the map, which will receive countenance, and perhaps justification, from Park's telling us that in that quarter he was told a stream arose which ran from the south into the Niger; I have laid down that stream accordingly.

And this is all that Ptolemy teaches us

about the Ni-Geir, of which river grave authorities have strangely told us "Ptolemy knew, and described the whole course!"—I will only say that if he did know it, his mode of conveying his knowledge has been such as to give me a great many hours of close application to understand his text,—and many more hours of patient thought to get at the geographical meaning of it.

We left the Ni-Geir at its junction with what Ptolemy calls the northern branch coming from Mount Usargola, and with the eastern branch coming from the Libyan lake, at a point which modern discovery has pretty accurately fixed; but it has still to "join" Mount Thala, from which, Ptolemy says, issues one of the sources of the Ni-Geir. Of the direction of the stream issuing from Mount Thala, Ptolemy, as is his custom, says nothing; and, taking the word *μεσσηνια*, and other matters, into consideration, the natural and obvious thing would be to lay down the stream in the map as issuing from Mount Thala, and flowing into the Ni-Geir some-

where opposite or near to the place where the Usargola and Libyan branches flow into it; and this was what I was disposed to do, until, on farther consideration, it occurred to me that modern discoveries had rendered it, I may say, certain that no stream ran in that direction; and that, moreover, this would almost imply the necessity of an inland lake on the spot at which these three streams united, beyond which the Ni-Geir did not flow. But we know from Clapperton and Denham, beyond all doubt, that the Niger does *not* stop or end either in a lake, or a marsh, or a sand, at or near its junction with the Kowarrama, but that it proceeds above 10 degrees of longitude eastward, and flows into the Tchad under the name of the Yeou. These considerations deterred me from making the Ni-Geir join Mount Thala and Mount Mandrus in this way, and I felt the necessity, before I went any farther, of carrying on the Ni-Geir as far as modern discoveries authorized, in the absence of all information from Ptolemy: and I conducted it in my map into the Tchad, a lake which

may or may not have existed in Ptolemy's time, but which, I am disposed to think, did not exist—not only because he has not made any mention of a lake in that quarter, but because I feel now pretty well convinced that the branch of the Ni-Geir issuing from Mount Thala is no other than the river Shary, which, joining the Ni-Geir at the spot where the Lake Tchad is now formed, may be said in Ptolemy's sense to "join" Mount Thala and Mount Mandrus; and the site of the Tchad, whether lake or marsh or neither in those days, was a spot of which Ptolemy had no distinct knowledge, but which he designated under the comprehensive word *μεσογαια*, into which, he says, the great rivers of this part of Africa ran, as the Geir did into another *μεσογαια*, when it was carried under ground—*υπο γην ενεχθεις*. Taking then the branch from Mount Thala as the Shary, I have no hesitation in expressing my belief that the Mount Thala of Ptolemy was one of the projecting branches of the Mountains of the Moon which Major Denham saw in his expedition to the Mandara country,

where he describes masses of hills rising to the southward in great grandeur and height, and extending indefinitely to the east and west, while he himself reached, or at least approached, one of the ramifications, which stretched out to the northward.

I have now pretty well exhausted the little Ptolemy has told us of the Geir and Ni-Geir. My reasons for writing these names as above, I have given before; and I consider them as having been probably placed in a sort of antithesis to each other; the Geir, with which Ptolemy begins, being the simple name, and the Ni-Geir a compound one, implying some quality or condition distinct from the simple name: but as we have no sort of information as to the language from which either name is derived, nor of the nations who gave those names, all speculations on the force or import of Geir or Ni-Geir would now be in vain.

Having done with the Ptolemæan rivers, and given the principles on which I have constructed the accompanying map after

Ptolemy, which differs so widely from all other maps I have seen professing to be after that geographer, it remains only for me to place, rather as a matter of curiosity than as bearing on the subject under discussion, the metropolis Nigeira, which Ptolemy fixes in $25^{\circ} 3' \text{ E.}$ and $17^{\circ} 41' \text{ N.}$

This longitude places "Nigeira metropolis" three miles to the eastward of the meridian of Greenwich:—to be sure, when Ptolemy comes to deal in *miles* of longitude in the centre of Africa, we can only smile at this little piece of geographical affectation. But the Edinburgh Gazetteer places Tombuctoo in $1^{\circ} 20' \text{ E.}$ of Greenwich, which is very near the longitude of Ptolemy's Nigeira, and the latitude of Nigeira and Tombuctoo agree exactly, being both in 17° N. I consider then the two places as identical, that is, as far as site goes; but I by no means intend to infer that the place we now call Tombuctoo existed, either *eo nomine*, or in its present form, in the days of the Alexandrian geographer: all I infer is, that the same causes have all along produced the same effects; and that

if the situation of Tombuctoo be now found convenient for a sort of commercial emporium of Central Africa, as all accounts represent it to be, the situation of "Ni-geira metropolis" was found to be the same near two thousand years ago.

I shall now go on to the consideration of a sort of geographical centaur, which has appeared of late years under what I should have conceived to be the immiscible names of the NIGER-CONGO.

ON THE CONGO, OR ZAIRE.

THE Congo, or Zaire, as far as we are acquainted with it, is a much more magnificent and a much larger river than either the Niger, or its continuation, the Nile of Bornou; but as the Congo, until lately, has not been much a subject of geographical discussion, it has not risen into such literary, or, I may call it, such classical importance, as the Niger.

This grand and prodigious stream has by some been strangely called the Niger-Congo, on an assumption that both rivers unite somewhere, and become one and the same; but I enter here my protest both against the compound name, and the inference intended to be drawn from it, on the double ground that the influx of the Niger into the Congo is, from all we know of the geography of those parts, highly improbable, and that it is also physically impossible, as I shall by-and-by endeavour to show.

The only thing I have met with in the shape of a *reason* for this making of the Congo swallow up the Niger is, that *no other* stream in Southern Africa would be large enough to do so, and that no such grand river as the Congo could be produced by any cause less than its having fed upon the Niger. This, to be sure, may be a reason in Africa, the former country of dragons,—monsters which some naturalist (I hope it was not Pliny, who, however, does speak of dragons,) has said could be generated only by one serpent devouring another. “Serpens, nisi serpentem comederit, non fit draco!”*—which, by the advocates for the Niger-Congo, would be translated, “The Congo never would have been the Congo, unless it had swallowed up the Niger.”

The editor of Park's last journal, has added to that journal, a copious and ably

* We must not, however, laugh too much at Pliny, or at dragons; for some late discoveries in geology have brought to light specimens of the Saurian tribe, winged, which, if they were not dragons vomiting fire and flame, were dragons in form and feature.

written appendix in six numbers. I shall take No. 4 of that appendix as the text to my following remarks.

The writer begins by stating the opinions of D'Anville and Rennell, that the Niger is lost by evaporation and absorption in sands, or in and about inland lakes in the eastern parts of Africa, and "which have "no communication with the sea."

I shall discuss this point on its own merits, without pleading the proofs I have offered in the preceding pages of the Niger's being otherwise disposed of, for, there may be many persons who may think after all, that it is much more likely that the Niger may be disposed of by D'Anville's and Rennell's method than by mine; but, although these are great names, I cannot subscribe to their opinions on this point; on the contrary, I have, from my first consideration of the subject, been quite convinced that such a mode of disposing of the body of water annually brought down by the Niger, particularly in the rainy season, was quite impossible, and wholly inadequate to the purpose.

The writer of appendix No. 4 expresses his doubts too on this subject ; but, as he rests them on very different grounds from those on which I rest my opinions, and as he only slightly touches on this part of the subject, I shall state my sentiments on this matter at some length.

From the first, as I have just said, I felt persuaded that such a river as the Niger did not, and could not end in a lake, or in a marsh, or be evaporated by the sun, or be absorbed by the earth. The mass of waters brought down is too great to be so disposed of, and I always felt that they must have an outlet ; and, my strong conviction on this subject led to those reasonings and researches by which I have endeavoured to show in the preceding pages, that such an outlet does exist, and that the Niger is received in the first instance by the Geir, or river of Bornou.

In my opinion on the impossibility of the Niger's being disposed of by evaporation or absorption I have been strengthened by every philosophical consideration of the subject, and by every reasoning from ana-

logy. Admitting for a moment, that in the dry season evaporation and absorption might dispose of the waters of the Niger—an admission however, which I am by no means disposed to concede, I must contend that the out-pourings of the heavens during the remaining half of the year, when perhaps on an average, an amount of rain falls every week more than sufficient to fill the whole bed of the Niger from its source to the Tchad, must have an outlet: for, when the sun's face is obscured by clouds, and when these clouds continue for months together to pour down torrents of rain, such as we see in the rainy season within the tropics, *no evaporation at all* can then take place. What then can become, during all these months, not only of the original stream of the Niger, which, by all accounts is always considerable, and which Park, near its source, even in the dry season describes as the "majestic Niger" rolling at his feet,—but, what can become also of the immense quantities of water which are discharged from the congregated clouds which shroud the sun during the rainy

season, and render him powerless for all purposes of evaporation?

In regard to absorption, no absorption can take place during this season, for the whole earth is saturated with moisture, probably in the first week of the rains,—and, when so saturated it can do no otherwise than throw off the accumulating fluid, which is thus compelled to press forwards till it comes to its lowest level; besides, it is supplied too fast to be all absorbed at once even by a soil not saturated. I contend then that this mass of waters, brought daily under the sun by the converging rush of tropical winds from the north-east, and from the south-east, and discharged during a whole season of tropical rains, must have an outlet. Those who have seen as I have done, season after season, these solar cataracts, cannot form or admit an idea of any lake retaining, or of any powers of absorption or evaporation disposing of the amount of such an accumulation for half a year, on a surface of thousands and thousands of square miles, draining into one common channel or bed, such as is the Niger;

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and those only who have never been within the tropics in the season of rains can entertain the opinion that these rains can be ever disposed of without an outlet.

The able writer of the fourth appendix, in speaking of the hypothesis that the Niger ran on and emptied itself into the Nile of Egypt, says, "that it may be affirmed "with great confidence that of all the "hypotheses respecting the termination "of the Niger, that which supposes it to "be a branch of the Nile is the most unfounded, and the least consistent with "facts."

I cannot help thinking that if that gentleman had taken the same view as I have done, of the impossibility of any sensible part of the tropical rains being carried off by evaporation or absorption during nearly half of the year, he would have come to the same conclusion that I did, namely, that any receptacle of the Niger intermediate to the sea, *must* have some outlet; and, having come to this conclusion, he would probably have gone on and come, as I did at first, to another conclusion, namely,

that that outlet went on probably till it met the channel of the Egyptian Nile; and, it was not till after many trials when I had found out a more satisfactory receptacle for the Niger, from reasonings founded on the facts and testimonies which came before me, and which I have stated, that I abandoned my opinion that the Nile of Egypt did receive the Niger. But, I see no natural or geographical objections to this, if the interposing line of the Misselad and river of Bornou, which I found an invincible obstacle to the Niger's course to the Nile were overlooked, for, I do not at all credit the accuracy of the great elevation given by Mr. Bruce to the heights of Senaar and parts adjacent, which elevation, if it did exist, would no doubt prove an insuperable bar to the progress of any stream from Central Africa to the Egyptian Nile. Doubting, however, as I do, the accuracy of Mr. Bruce's geodætical calculations, I think that valleys will some day be found, which run uninterrupted from the eastern part of the lake Tchad or marshes of Wangara, to the valley in which

the lower part of the Bahr el Abiad or upper part of the Nile of Egypt runs, by which a communication between the two rivers would at least have been physically possible, had not an interposing stream cut it off; or in case any interruption shall hereafter be found to cross in on such communication, it will be probably found to be caused by the range in which the copper mines of Fertit are found, and not in the more distant regions spoken of by Mr. Bruce, and which have generally been assigned as the insuperable barrier to the junction of the Niger with the Nile. But, as the whole country between the Tchad, and the Bahr el Abiad is unexplored as yet, hypothetical discussions on this subject can lead to no satisfactory result.

The writer of the fourth appendix, next discusses and treats as a fiction the account given by Mr. Jackson of seventeen negroes, who, says Jackson, proceeded down the Niger from Jinnée, on a commercial expedition, and who reached Cairo after a voyage or journey of 14 months.

These negro merchants, (I should rather

think they were Moor merchants, from the enterprising spirit of their adventure,) said “ they found *the Nile* so shallow in consequence of channels cut for irrigation, that “ they could not proceed in their boat, and “ that they were obliged to transport it by “ land.”

Now it is quite clear that this could not be true of the Nile of Egypt, for, in the upper part of that river, there are few or no irrigations, in consequence, as we are told, of the great height of the banks—and, in the lower part where irrigation is practised, there is always water enough for boats.

These black merchants must therefore have been speaking of some *other Nile* than the Nile of Egypt,—and this was no doubt the Nile of Bornou; the shallow impracticable part of the river being that portion which lies between the Tchad, and the river of Bornou, in about lat. 16° N. which even in the rainy seasons is probably in many parts a “ Bahr Abiad” or a white, frothy, and foaming river, amongst rocks and large stones, where boats could neither sail nor row, and which, although afford-

ing an ample passage for the waters of the Niger, (like an Italian Fiumara which is often above a mile broad, and quite full in winter, although not having on its surface a drop of water in summer,) was not navigable even when the inundation of the rainy season was at its height; at this part of their journey then these merchants would have to carry their boats, and, I can quite understand that Major Denham may have been assured, as he says he was, by Barca Gana and others that there was no "outlet" to the Tchad, and that their informants as far as their eyes went, may have spoken the truth. Barca Gana no doubt made his foray, of which he was speaking to Major Denham, in the dry season, when Edrisi tells us that the inhabitants on *both* sides of the Niger, which he calls the Nile, made cuts for irrigation, and of which Jackson's black merchants complained, as the cause which had rendered it innavigable.

These irrigations, aided by the great evaporation and absorption at the hot and dry season of the year, may have so far

diminished the waters of the Niger as to prevent it from flowing out of the T Chad in a very sensible manner, or in such a way as to impede or draw the attention of a roving horseman and his party galloping across the channel, and whose eyes and thoughts were fixed on some distant plunder; but, whoever has been in Spain, Sicily, Calabria, or indeed in almost any other parts of the south of Europe, will have seen numberless instances in summer of such latent streams as the one I suppose the T Chad to give out towards the east. These in Spain are called "dry rivers," (*rio secco*,) a descriptive term borrowed by the Spaniards from the language of their Moorish invaders, who speaking Arabic, left the denomination of "dry river" in Spain as they had before done in a certain place in Egypt. In all the above-named countries in Europe, the stream is to be found a few feet under ground by digging, and thus the redundant water of the T Chad may, and probably does, escape by a "rio *secco*." But after all, did Barca Gana really use the comprehensive word "outlet"

or any equivalent, to Major Denham? or, did he not rather assure him that no Quolla or Nile ran out of the Tchad? I think it probable that this may have been his expression, and that all he meant to say, was, that no deep stream ran out of the Tchad to the eastward; and, I suspect that the dialogue ran in something like the following terms—Major Denham would ask Barca Gana, and Tahr, and the rest, “does the Quolla run out at the eastern side of the Tchad?”—the natives attaching, as they all did the idea of a deep river to the word “Quolla,” would all answer “no, certainly not—we have been all round and round the lake, and no Quolla runs out of it on that side.” Major Denham not attending to the true meaning of the generic term “Quolla,” which appears to be equivalent to a “Nile,” wrote down as a matter of course, that there was no “outlet;” but, had Major Denham followed up their answer with this question, “what, does no Bahr at all run out of the eastern side of the Tchad?” I think it probable that these Africans would have vociferated

one and all, "Oh yes! there is a Bahr, a " Bahr Abiad, a white river amongst rocks, " but no Quolla, no Nile, no deep water."

Besides, we must not forget the direct evidence of the Sheikh Hamed the other way. He told Major Denham that the Tchad *did* formerly empty itself into the Bahr el Ghazel, or Nile of Bornou, by a stream; and the Sheikh, apparently desirous of following up this stream, added, after speaking of the lake Fittre, (lake Nuba of Ptolemy,) that lake Fittre had a stream running out of it. A Burgoo-Tibboo man also told Major Denham that the Bahr el Ghazel received the waters of the Tchad. Now the country Burgoo-Tibboo is close to the Bahr el Ghazel, and not far from the channel we are supposing. All things, therefore, considered, the *evidence* in favour of the *positive* fact is beyond all comparison stronger than the evidence of the negative,—to say nothing of the probabilities, which are all on the side of the affirmative of this question. Moreover, Major Denham himself gives in his map the bed of a "dry river," or "rio secco,"

—indicating thereby a sometimes “wet river.”

Then in regard to the twelve hundred cities or towns which these men declared they saw in their journey, the writer of the appendix rejects this as utterly unworthy of any credit, because it is “mere hearsay evidence.” But is not the greater part of the information we have relative to Africa “hearsay evidence?”—from the time of Herodotus, who gave hearsay evidence from King Etearchus, and so many others; from the time of Pliny, who took hearsay evidence from King Juba’s accounts, down to Park, Denham, and Clapperton, who have given us a great deal of hearsay evidence for what they relate? Besides, we must recollect, when we talk of twelve hundred towns and cities, how much all travellers are apt to exaggerate, and that these towns and cities were probably very many of them mere villages. We must recollect too how lax all half-civilized or uneducated people are in regard to numbers: and, lastly, we must take into account the figurative way in which Eastern

nations express themselves when they want to convey the idea of any very large number or quantity. For my part, I believe Jackson's account of these seventeen black merchants and of their expedition; but I believe that such an expedition has not been often repeated, that is, as a boat expedition, because of the impediments in a particular part of the river; but, I do believe that these merchants did find a great number of considerable towns on the navigable part of the Nile of Bornou, and that to traffic with those towns was one chief object of their undertaking. Claudian, (though poets are not authority in a dry discussion like this,) bears indirect evidence of cities on its banks, as well as of the traffic on this great river, by calling it "*Gir, ditissimus Amnis.*"* As to the lat-

* Claudian, however, seems to have made the state of rivers and their banks his study—at least I think it is Claudian, who, in describing the improved state of the Banks of the Rhine, between the Roman province and the adjacent German barbarians, says:

—————"geminasque viator
"Cum videat ripas, quæ sit Romana requirat."

ter part of this journey, I conclude it must have been performed by land, from the lake Dombou to Cairo. Jackson's passage is as follows, and is very circumstantial:

“ In the year 1780, a party of seventeen
 “ Jinnée negroes proceeded in a canoe to
 “ Tombuctoo on a commercial speculation
 “ * * *. They bartered their merchandize
 “ several times during their passage of
 “ fourteen months * * *, &c. They re-
 “ ported that there were twelve hundred
 “ cities and towns, with mosques and tow-
 “ ers, between Tombuctoo and Cairo.”

* * * * “ In these places they found the
 “ Nile so shallow, by reason of the nume-
 “ rous channels cut from the main stream,
 “ for the watering of the adjacent country,
 “ that they could not proceed in their boat,
 “ which they transported overland till they
 “ found water flowing again in sufficient
 “ quantity to float it. They also met with
 “ three considerable cataracts, the princi-
 “ pal of which was at the entrance of the
 “ Wangara; here also they transported
 “ their boat by land, till passing the fall of
 “ water they floated it again in an immense

“ lake, whose opposite shore was not visible.” Mr. Jackson’s whole narrative is full of useful information, and is written with great good sense. His accounts of the caravans are very curious, and his book deserves to be consulted more than it has been.*

I now come to the third paragraph of appendix No. 4, in which is mentioned the notion that the Zaire or Congo is no other than the continuation or end of the Niger—a notion taken up by Park chiefly, it appears, in consequence of information he received from a Mr. Maxwell in Scotland, in the interval between his first and second expedition. For this notion there is not, I think, a tittle of *primâ facie* evidence; it militates against all that is known of the geography of Central Africa, in no work or account of which, anterior to Park’s time, is to be found a trace even of the fancy that the Niger runs to the south, so as to enter the Atlantic by means of any river; on the contrary, every account, from

* Jackson’s Travels. Bulmer & Co. London, 1809.

Herodotus downwards, implies the ending of the Niger either in central lakes or sands, or its being carried off by the Nile of Egypt, or at least by a Nile. Moreover, this notion is repugnant to all that is known of the courses of all the great rivers in the world, as well as against all that can be inferred by analogy; by which we may and do infer that, as we have seen nothing of the kind before, so we are not likely to see in the Niger the phenomenon of a great river first of all taking one decided course for a great many hundred miles in one direction, and then turning back towards the very point of the compass from which it had started,—so as to enter the ocean by a sort of *Βεσποφηδον* process, by a course parallel to and the very reverse of its original one: but this is what the Niger must do, if it enters the Atlantic by the Congo or Zaire.

I do not think it necessary to follow Mr. Maxwell through all his reasons, or rather his assumptions, on which he grounds his opinion; I shall, however, notice a few of them.

Mr. Maxwell says, that it struck him that "the Congo derived its sources *far* to "the northward." So it does, doubtless, and I place them with much confidence in the southern face of the great range of mountains which runs across Africa, from the southern end of the Red Sea, to Cape Verd, which Cape it forms; and this great range, before it dips finally under the Atlantic, shows some of its loftiest and westernmost summits above the waves, under the name of the Cape Verd Islands.

A question has been raised as to the continuity or non-continuity of this central range. As far as the sources of the Congo are concerned, this is a question of no importance, for that river may as well be generated in and maintained from several disjointed masses of mountains, as from one continued range; but my own opinion is, that this range is continuous, and that it has no opening any where by which a river could pass; nor do I think that any river would ever wear through the immense and elevated mass of granite which we now know forms the base of this grand

range. That this base is composed of granite, we have the most unequivocal testimonies of Captain Clapperton, when he crossed its western end at the dip in the Kong mountains, and of Major Denham when he went to the Mandara range, which is at the eastern end. More than one writer, indeed, has contended that it is highly improbable that *any continent should be crossed* by a range of continuous mountains of such great length as the one under consideration, but, I think that those who take this view of the matter make the important mistake of considering that as the principal, which I conceive to be the accessory. I would not speak of extended countries being crossed by ranges of mountains, but, I would speak of mountains as the generators of those countries. We do not draw inferences as to the continuity or non-continuity of an animal's bones from the exterior form of the animal we view, but we attribute that form and configuration to the principal and sustaining material within. I have had occasion to consider in the general, many extensive ranges of

mountains in Europe, Asia, and Africa, and their evident effects on the configuration and state of their adjacent countries, and in doing so, I have always had in my mind's eye the idea of a sort of geological osteology—a fanciful one, perhaps;—I am not going to extend it by a general personification, or assimilation of all parts of the earth to some parts of the animal body, in defiance of the rule of Vida, who in advising us not to push comparisons too far, says—

“Nec crines Magnæ Genitricis gramina dicat;”

therefore I hope I shall be excused for this single comparison of the mountains of our “Magna Genitrix” to the bones of the body.

The question then, in my view of it, is this—is there any reason why, in one of those great convulsions of the earth by which immense masses have been lifted up by some expansive principle below, that principle should not have acted in a line running east and west on our globe, between those points which have since been

called Cape Guadafui and Cape Verd, and which remain capes *because* they are parts of the original and permanent stretcher by which the continent which rose as a part of that range was kept out to that extent? This I apprehend is the question to be asked, if I am right in thinking that great mountain ranges are the principals on the surface of this globe, and the lands spread out at their feet the accessory.

The range of mountains for the continuity of which I am contending, (which continuity has, I believe, never been impugned but on the ground I have stated above, namely, the improbability of such a *continuous* range running across a continent,) has given, in my opinion, the form and character to all that part of Africa which lies adjacent to it—while its absence in other parts has negatively caused the form and character of much of the rest of Africa. When that range was first elevated above the waters, standing as it no doubt did on a base widely, and perhaps equally extended on both sides of it, it bore on its summits and declivity much miscellaneous

matter—solid and soluble—hard and soft—which, attacked by alternating heat and cold, drought and moisture, expanded, contracted, cracked and loosened, and has been successively, from the first, washed or rolled down as detritus; thus contributing to form the accessorial continent through which the mountain torrents were afterwards to roll as rivers, when their channels had been ascertained and fashioned by those laws which govern fluids in motion. While this was going on, the Atlantic on one side, and the Eastern Ocean on the other, were making their impression on and washing away the new continent which had risen between them, wherever it was not consolidated and sustained by the mountain range, which it had attended on its emerging from the ocean; accordingly we see the line of coast trending immediately back, both north and south of Cape Verd, and showing evident marks of its inability to resist the waves. To the north it yields, up to a certain cape made by the Black Mountains, which rising at that cape, extend to Cape Bon, but between these

caples and along their interjacent range the ocean marks its inroads, until the waters force their way into the basin, now called the Mediterranean Sea. To the southward of Cape Verd the continent suddenly gives way, and the immense bay of Benin and Guinea is formed, leaving a line of coast of many degrees of longitude parallel to and lying under the great parent range; and then the whole coast continues to trend away till it ends in a point at the Cape of Good Hope, which point is the extremity of another immense mountain range, thrown up and generating the eastern coast of Africa. Thus it is that countries receive their character and formation *from* mountain ranges,—instead of reasoning from continents to mountains, as the objectors to the continuity of the central range do, I reason from mountains to continents, and I see no geographical or physical reason why such a range as we are contemplating, should not be produced unbroken, since we have the example of a much longer one in the Cordillera de los Andes, and which is the parent generator

of the western coast and southern extremity of South America.

Until actual observation then, shall have afforded proof that this range is divided, or broken into masses, so as to admit a river to pass, I shall contend for the continuity of its elevated and broad base. To this mountain range however, broken or unbroken, I go for the sources of the Congo,—where they will rise sufficiently far off, and to the northward, to give an ample length of course to the river before it reaches the Atlantic; for the line I have assumed for that course runs through about 20 degrees of longitude, and 12° of latitude, which, at a moderate calculation, implies a course of near 2000 miles, *by far the greater part of which is through the climate of perpetual rains*, to say nothing of the melting of the snows of the mountains, as the sun approaches and passes over them twice in the year: and this course will make the river the receptacle, by various channels, of probably one-fourth or fifth of all the waters which either rise in or fall on the southern face or subjacent

vallies of the great chain of Central Africa. Besides this, the Congo receives, lower down, the immense stream called the Zaire, whose source, from all we know of its general direction, is probably in the Zanguebar Mountains; and which, according to the best accounts we have, flows through the great lake Aquelunda, which damming up in the rainy season an enormous mass of waters, lets them out again gradually, by which the almost equable height and fulness of the Congo, so much remarked on in recent accounts, are maintained in part; while other lakes, formed probably in the long passage of the river flowing from the central great range, would govern and regulate also that branch of the river, so as to produce an equable supply of water to it.

Mr. Maxwell's next reason is, because if the Congo be not the outlet of the Niger, the other rivers on the coast are inadequate to that purpose. I do not at all agree in this conclusion from the premises; for as a matter of mere logical inference, I cannot come to the conclusion that because one parti-

cular river on a particular coast is the only one there able to receive the body of water known to exist in another river in a distant country,—that, *therefore*, that other river must, perforce, be precluded from the possibility of turning itself to some other quarter, and of emptying itself elsewhere. But, as a mere matter of arrangement, let Mr. Maxwell bring but the Niger through the central range of mountains, and a much nearer and fully adequate passage for the Niger to the sea will be at hand in the river Formosa, which empties itself into the Bight of Benin,—so that I there find at once what Mr. Maxwell says is not to be found, that is, another river, besides the Congo, quite large enough to receive the Niger.

Next comes the very surprising argument of Mr. Maxwell in support of the Niger running into the Congo, that “the floods of the Congo commence long before any rains take place south of the equator; since,” continues he, “it begins to swell perceptibly about the latter end of October, and no heavy rains set in

“before the end of December.” Could any man who had *resided* within the southern tropic ever write this? The sun crosses the equator on his way southward on the 21st of September, and from that time forward in his progress to the tropic of Capricorn, he pours down his torrents on all the intermediate regions; so that the Congo, “beginning to swell perceptibly in “the month of October,” would precisely accord with the tropical rains which fell in September, when the sun crossed the equator; and so far from no “heavy rains” setting in “before the end of December,” that was the period at which the train of tropical clouds had discharged full *one-half* of all they had to give to the southern hemisphere, and by the “end of December” the sun would be already in his way *back* to distribute the other half. But besides all this most extraordinary reasoning against the course of nature, and against known fact, Mr. Maxwell reasons too on the assumption that the Congo, like some other great rivers, is subject to great periodical risings; whereas all the latest and best

accounts, (and Mr. Maxwell, from his long residence in that quarter, one would think might have anticipated them,) agree in representing the Congo as flowing onward in an uninterrupted volume of equable grandeur at all seasons, rising, at the most, not above 9 feet;* a phenomenon which I have attributed above to the probable regulating influence of large lakes, whose nature it would be to keep up such an equability of supply, and which not occurring, as far as we know, in the Nile of Egypt, that river sometimes rises 30 feet.

Mr. Maxwell next says, "I believe that "our information of the Niger losing itself "in the desert, rests solely on the authority of the Romans!" Now, of the Romans, Pliny, as regards the Niger, is, I believe, the chief writer, to say nothing of the fact that almost all writers, *except* the Romans, have spoken of the Niger as ending in a desert. Pliny tells us in the clearest manner, that "*the Nile*," which is the name

* Mr. Maxwell, indeed, mentions this rise of 9 feet, yet he reasons as if he did not know it, and it is to his reasonings I am adverting here.

he gives to the river which traverses Central Africa, and which we call the Niger, rises in Mauritania; that King Juba says so,—and that this river and the Nile of Egypt are increased by rains after the same manner. Pliny then goes on tracing his Nile-Niger to the eastward till he gets it into Ethiopia, which he says it divides into two, and here, without one word about a desert, Pliny makes the Niger join the Egyptian Nile, and then flow into the sea.

I am only surprised that Mr. Maxwell's theory should have been supported, as it has been, by several literary men; and it is to be lamented that poor Park's head was confused with so wrong a notion, and which appears to have stuck by him, and to have actuated his hopes, and probably influenced his actions to the very last.

The writer of No. 4 of the appendix sums up the reasons for and against this hypothesis of the Niger-Congo, and at one time he appears rather to incline to it; though he afterwards lays a strong stress on the difficulty of conducting the Niger through the mountains which are known

to exist in Central Africa. Had he known then, as is now ascertained beyond doubt, that these mountains rest on an immense granitic base, he would probably have come to the same conclusion that I have done, that this obstacle is insurmountable.

The industrious writer of No. 4 of the appendix next cites the opinion of M. Reichard, put forth in the "Ephémérides "Géographiques," at Weimar, in 1808, and to which Malte Brun refers, and which is, that the Niger, after reaching Wangara, takes a direction towards the south, when being joined by *other* rivers (what *other* rivers?) from that part of Africa, it turns to the south-west, and enters the Atlantic in the gulf of Guinea. I shall only oppose to M. Reichard the granitic mountain base of Central Africa, and what I have said in favour of the Niger entering the Nile of Bornou.

I cannot leave this appendix without expressing my humble tribute of applause at the fairness and impartiality with which all the disputed points are stated and discussed in it, and at the exclusion of all

preconceived theories to which facts were to be made to bend by whatever means. The author appears to have been sincerely in search of geographical truth, and to have kept this sole object clearly in sight from first to last.

I will here, in conclusion, say a few words on an admirable article in the *Edinburgh Review* * on Denham's Travels. The writer tells us, and truly, that the several names given by the natives to the river seen by Park, all relate to one and the same river. Had he gone on a little further and ascertained the meaning of those names, particularly of the word Nile,† he would probably have generalized the term, and would also probably have come to the same conclusions as I have done. He says, of Jolli, Colli, Quolla, Quorra, Quarra, and Kowarra, that "however widely the ex-

* Vol. xliv. 1826.

† I am aware that the reviewer once or twice approaches this, and I felt almost that I was going to be anticipated on this point; but he either stops short, or turns off, without going into the generalization of the names of African rivers.

“tremes diverge, the *name* is radically one
“and the same.” He might have added
Sultan Bello’s affected diminutive Kowar-
rama.

He then gives it as his decided opinion,
“that of all the claimants for the name
“of Niger, the river explored by Park,
“though not the earliest, is the most con-
“siderable, and that which is fully esta-
“blished as such in the minds of Euro-
“peans.” Certainly there can be no doubt
of this; and the writer makes a happy con-
jecture, that the stream which flows *west-*
ward past Sultan Bello’s capital, must have
been the stream which suggested to cer-
tain Arabian writers the idea of a “Nile of
“the Negroes” flowing in that direction.
I only wonder that, having got thus far,
the writer of this able article did not im-
mediately discover that these same Ara-
bians did not use the term Nile in an ex-
clusive, but in a generic sense; and that
he did not see that when the Arabic writ-
ers announced a *Westerly* Nile of the
Negroes, they by no means excluded the
existence, at the same time, of an *Easterly*

Nile of the Negroes; of which indeed they speak, and to which they allude, as a matter of neither difficulty nor doubt. I cannot, however, subscribe to the suggestion of the learned reviewer which follows, namely, that that part of the Niger which Major Denham calls the Yeou was "probably the "Ethiopian part of that vast and devious "course, partly above and partly under "ground, which Pliny assigns to his combined Niger and Nile;" because it is too far from Æthiopia, in the general acceptance of that name, although Pliny certainly uses the name Æthiopia with considerable latitude, and because the river Yeou does *not* disappear or run "under ground."

I would place the Æthiopian part of the Niger's course referred to in the Review, as being "partly above and partly under "ground," in the part of the river which, according to my hypothesis, connects the Tchad with the Nile of Bornou, where, if my conjectures be right, we have alternately either a "Bahr Abiad" or a "dry "river" sometimes above and sometimes under ground; and *this part is* sufficiently

near Æthiopia to be considered as an Æthiopian part of the river, in Pliny's large use of the word Æthiopia.

The learned reviewer whom I have been quoting, gives also a decided opinion in favour of an "inland termination" of the Niger, and which inland termination all the context of what he says evidently implies as occurring in or near the T'chad, or Wangara lake or marsh.

In this opinion I can by no means coincide, indeed one of the chief objects of this dissertation is to prove *another* and a *very different termination* of the Niger; and, I cannot help indulging confidently in the hope and belief that if this humble essay should ever meet the eye of the gentleman whose able article in the Edinburgh Review I have just been considering, he will not receive it the less favourably because it happens to clash with a preconceived and expressed opinion of his own.

In what he says afterwards of the continuity of the great range of mountains of Central Africa I heartily concur, and I had written every word of what I have said on

that subject, to the exclusion of the river Congo and the river Formosa as recipients of the Niger, before I had read a line of the article which I have just been citing. I cannot however help thinking that there is an error in the statement made in that article, that “in Benin there are no Arab caravans, no Mahometan population—nothing that indicates a free intercourse with Soudan?”

There is evidently a commercial route over the Kong mountains by which Capt. Clapperton crossed them, and in the whole of which he found Mahometan merchants, and towns and villages. By this route the Mussulman traders may, and no doubt do spread themselves to the southward as far as trade encourages them to do so, and, wherever they go, they do not fail to leave behind them strong indications of their influence by the names and customs which they stamp on the regions they enter. The measure or limit of this Mussulman inoculation, I take to be quite of a geographical nature, and, I am disposed to say, as a matter of clear and obvious rea-



ning, that if the central ranges of mountains be, as I believe them to be, generally impassable for commerce, as they are universally so for rivers, we shall find no Moorish names or usages any where directly inland to the south of them in the interior, and that wherever we do find any such names or usages we shall discover that they are only in the tracks of merchants, such as that over the Kong, or else at the mouths of, or a little way up the rivers of Southern Africa which are accessible to shipping, as we find to be the case in the Congo.

I do not understand Sultan Bello's map as the writer of the article in the Edinburgh Review does. I see nothing in it which implies, that the Niger performs "the immense circuit necessary to make it become the Shary, and enter the Tchad under that name." I read the Sultan Bello's map thus:—and, a copy of it as given in Denham is annexed.

In the first place we have in it the Sultan's own river—the Kowarrama—flowing *westward* past Sakkattoo. The Sultan, and his schoolmaster, who appear to be a

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couple of African geographical pedants and Dilettante, not only make maps, but they must refine on the pronunciation of their rustic neighbours,—and, instead of telling plainly of the “Quorra” as others do, they must mouth it out into a lengthened Kowar-ra, which a moment’s consideration shows to be no other than an affected delivery of the word “Quorra.” In the same way these men of refinement have lengthened out the name of the Sultan’s river from plain Quorrama, to Kowarrama;—but to return to the map, we see there the main Niger running eastward, and receiving, as it really does, the westerly Nile of the Negroes, or Quorrama. The Arabic inscription on the main stream, is thus given in English: “This is the sea (river) Kowarra, which reaches Egypt, and is called “the Nile.”

Now, although I do not subscribe to the Sultan’s opinion, that the Kowarra ever reaches Egypt, yet, this assertion in the map implies clearly the belief so universally expressed, that the Kowarra or Yeou continues its course far eastward,—or in other

words that it does not stop in the Tchad; indeed, the more we look into this part of the subject the clearer it seems to be, that the opinion that the Niger ends in the Tchad is rather an inference drawn by European travellers and writers, than a thing which rests on any substantial direct evidence, or on any authenticated opinion of intelligent natives.

The line of trade marked in the Sultan's map through Atagara, evidently points to the pass in the Kong mountains by which Capt. Clapperton crossed the great range; and I wonder that this obvious commentary on the map should not have been made before. "The distant salt sea" alluded to as lying beyond many and great deserts, must be the Atlantic generally, lying to the westward; and, between which and Bello's dominions, the Great Sahara was, to a certain degree, interposed. In short, the Sultan's map is correct in all essentials, although the delineation is faulty and crude; yet it goes to confirm the general course of the Niger, or Nile of the Negroes, as it has been laid down by Park

and Denham. But when Major Denham proposes to lead the Quorra into the Tchad, by means of the Shary, I see not only that the thing is impossible, on account of the range of hills, running out to the northward,—which Major Denham himself says he saw rising like Alps in the southern distance in his expedition to Mandara, across which, and their parallelly interposed valleys, no river could ever cut its way,—but I look in vain in Sultan Bello's map for any authority by which Major Denham has drawn in his own map, a line running from west to east, 8 or 9 degrees south of, and parallel to the Yeou, which runs into the Tchad. The Sultan has no such line of river in the map Major Denham publishes *as the Sultan's*. The most *southerly* line of river given by Sultan Bello in the published map, is entitled by the Sultan “the river Kowarra which reaches “Egypt”—from which I should draw any inference rather than that it runs into the Shary; besides, this southern line of river given by the Sultan runs nearly parallel to the Sakkattoo river, and not far from it,

which it could not do if it had to get 8 or 9 degrees south, where Major Denham has put it in his own map on Sultan Bello's authority, but I find no such authority in the Sultan's map.

After deciding in favour of Park's river, being Ptolemy's Niger, in which opinion I concur, the article I have been referring to says, "whether it terminates in the Gulf of Benin, or in an inland sea, it must have a course of near 2000 miles; which will make it rank with the first rivers of the old, though not of the new world;" "but still it will not possess either the unparalleled magnitude or the *unique* and *peculiar* character which have so long been ascribed to the Niger."

I hope that, if my hypothesis as to the final disposal of the Niger be sound, I shall have restored to it the "unique and peculiar character" the supposed loss of which is here deplored: I think that if I have completed what Ptolemy left incomplete, namely, the connection between his Geir and Ni-Geir—that if I have identified these

* See Sultan Bello's map annexed.

two great streams after they become one with the Nile of Bornou;—if I have placed and established in the course of my Niger the long-disputed position of Ulil; if I have then traced the same Niger travelling for hundreds of miles under the Libyan sands; if I have for a moment disinterred as it were to the mind's eye, the cities and towns and people which once probably animated its banks; and, if I have laid bare to the imagination for an instant, the now buried vallies which once smiled on its course; if I have finally shown the “unique and peculiar” Niger to be the cause of the long-renowned and fatal Syrtis;—I think that if I have been successful in doing these, or some of these things, the Niger will not have suffered in my hands. I do indeed feel that the attempt I have made to unveil the mysteries which have hung over the Niger in its passage through western Æthiopia, and the sands of the Libyan desert, is a bold attempt, but I hope it will not be called a presumptuous one;—nor could I deny to myself an indulgence in the dream, if dream it be,—which

presented to me the great Nile of Central Africa rolling forwards majestically to the shores of the Mediterranean, through countries then swarming with people, and animated by intelligence; and through valleys either bespangled by cities, or enamelled by the varied productions of a luxuriant soil, fertilized by the waters of a noble stream whose very existence has been for centuries forgotten; in a climate too, where nature was ever bursting with spontaneousness, and yielding forth a perpetual round of productions, combining throughout the year, the infant delicacy of vernal freshness with the luscious fulness of autumnal maturity.

SOME OBSERVATIONS ON THE AFRICAN GEOGRAPHY OF MONS^r. D'ANVILLE AND MAJOR RENNELL.

IT would be an ungracious task at this period, when so many additions have been made to our knowledge of Central Africa, were I to bring forward and analyse the works of the above-named two celebrated geographers, by the standard of our information at the present day; but as their names have been, and still are used as decisive authority on points of African geography, which are not yet settled,—some of which I have endeavoured to arrange, by discarding all preconceived theories, and by using faithfully and diligently the original materials, which I have in common with others before me,—I cannot avoid making some remarks on these well-known authors.

The first-mentioned has been deservedly called “the learned and accurate D’Anville,” and by no body more emphatically

so than the celebrated historian of the Decline and Fall; but these qualities, although very generally ascribable to him, are not invariably and without exception his due.

The greatest fault I have to find with D'Anville regards his map, which he professes to make after Ptolemy, but in which he sometimes differs very materially from that author; and sometimes he inserts things as Ptolemy's for which that geographer has not afforded the slightest authority. I suspect either that D'Anville could not, or would not, read Greek. There are certainly more indications than one that he trusted to Montanus's Latin Translation of Ptolemy; one of which is his rendering the word *φαραγξ* into "vallée,"—thus copying the word "vallis" of Montanus, which I have shown elsewhere not to be at all the sense in which Ptolemy uses this word,—and which he applies no where to the source of any stream, except that of the Geir, whose peculiar origin is depicted by the word *φαραγξ*.

D'Anville, moreover, says in his "Géographie Ancienne," in speaking of the

Geir, that its fate was “ *de périr dans les terres affaibli par des fréquentes dérivations,*” for which last sentence he has no authority, as well as I recollect, from any ancient author, nor, I believe, from any modern one, up to this time. He seems to have confounded what Edrisi says of the Ni-Geir with what he says of the Geir: but my chief complaint, as I have said above, is of D’Anville’s map, of which I should have said but little had he given it to us as the *result of his own conjectures* in regard to Central Africa; but when it comes forth as framed from Ptolemy, we owe as much justice to the Alexandrian as to the French geographer,—and we ought not to allow Ptolemy to be made to say, nor should we receive as his, what he neither does say himself, nor in any way authorize another to say for him.

D’Anville follows the general opinion that Ptolemy drew his first meridian through Ferro, with which opinion, as entertained by D’Anville, I can have no fault to find, as he has had the general opinion with him; although I have shown, I hope, in

my endeavour to adjust the Ptolemæan geography affecting two celebrated rivers, the Geir and the Ni-Geir, that Ptolemy did not draw his first meridian through Ferro: but D'Anville having assumed that he did so, finds himself involved in inextricable difficulties and contradictions by a longitude measured from that meridian;—when instead of either avowing that nothing was to be made of it, or searching about for a satisfactory solution of the difficulties, D'Anville sets about putting down his Geir, Ni-Geir, and lakes, in an arbitrary manner, and he places them in longitudes wholly at variance with those given by Ptolemy.

For instance, Ptolemy tells us that

The Garamantine Pharanx is in 50° E.

D'Anville places it in 43° E.

Now, according to D'Anville, Ptolemy measured his meridians from Ferro, consequently when the French geographer puts down any place in his map, he means of course to put it down so many degrees east or west of Ferro—how and why then, when Ptolemy says that the Pharanx was in 50° E., did D'Anville put it down in 43° E. ?

Was it because he felt that it could not *possibly* be in 50° E. of Ferro? But I felt at once that the *longitude* 50° E. was an *unchangeable condition* laid down by Ptolemy, from which I was not on any account to depart; and in constructing my map, I cared not *where* the Pharanx might happen to be thrown, provided I obeyed the instructions of my author; accordingly, in my first-constructed map, I laid it down in 50° E. of Ferro, and found my Pharanx quietly deposited in or near the lap of the Egyptian Nile. This, and some other anomalies of the same sort, startled me, and awoke my attention to the Ptolemæan longitudes; and had D'Anville stuck to his author, as I did, he would probably have anticipated me in what I have now done to rectify the prevailing but erroneous opinion. I found myself obliged to reconstruct my map from the point through which I clearly saw Ptolemy's first meridian must have passed, and I had then the satisfaction of finding the Garamantine Pharanx coinciding with the copper mines of Fertit, in 50° E. of Ptolemy, and 25° of Greenwich.

The following are some more instances of D'Anville's inaccuracy:

Ptolemy places the *medium* of Mount

Usargola in 33° E.

But the *medium* of D'Anville's Usargola is 28° E.

Ptolemy places Mount Thala in 35° E.

D'Anville places it in 37° E.

Ptolemy places the lakes Chelonidæ in 49° E.

D'Anville in 43° E.

No doubt because he felt uncomfortable at seeing that 49° E. of Ferro would put these lakes in the Egyptian Nile, or thereabouts.

Ptolemy places Lake Nuba in 50° E.

D'Anville places it, no doubt for the same

reason as above, in 43° E.

Ptolemy places the Libyan Lake in 35° E.

D'Anville in 38° 30' E.

That is in some copies of his map,—in others the words "Libyan Lake" are omitted, and "Mer douce" inserted instead.

Ptolemy puts Nigeira Metropolis in 25° 3' E.

D'Anville, in some editions, puts it in 30° E.

But in his map of 1749 it is omitted.*

The above will suffice to show, that if D'Anville be right in any of the above *as*

* In the earlier part of my professional duties I had a good deal to do with map and plan drawing, in which we were expressly charged and habituated to keep clear of *coaxing*, which is the technical term for the D'Anvillian process above seen.

to real position, he is not so on the authority of Ptolemy, whom he cites, but from whom he differs most essentially, as I have just shown.

I will say nothing of the course and arrangement he gives us for the Geir and Ni-Geir, farther than that some of it is not reconcilable with what Ptolemy says; and the whole of it is at variance with what is now known to be fact in regard to the Ni-Geir; whereas Ptolemy, who has not told us much, at least has told us nothing about the Ni-Geir which is not confirmed by modern discoveries.

My endeavour was to reconcile Ptolemy with those discoveries, but, which I was bound to do, if it could be done at all, by *rigidly adhering to Ptolemy's own data*, which I felt I had no right to bend in any way, or to alter. If Ptolemy could not stand the test of being thus compared with modern ascertained discoveries, he was evidently worth nothing as an authority, and I should have declared him so at once. The results of my mode of treating this geographer, *on his own text*, have already been detailed.

D'Anville, in his Map of 1749, erroneously makes the Geir the Nile of the Negroes, taking, probably, his ideas of the Nile of the Negroes in part from Edrisi, who, however, makes that river flow westward; but D'Anville makes the Geir flow nearly due north, as Ptolemy implies that it does. Thus D'Anville seems to have taken his name from Edrisi, and his course of the Geir from Ptolemy; thereby creating additional confusion in regard to the ancient geographer's Geir.

In conclusion, he says that its fate is, "*de périr dans les terres affaibli par des fréquentes dérivations;*" for which, as I have remarked before, there is no sort of authority in Ptolemy. But, moreover, D'Anville is at variance with himself on this point, for he makes a dotted line indicate his belief, at least, that the Geir ended, not "*dans les terres,*" but in the lakes Chelonidæ. He appears to have been confused by the cross purposes of Montanus and Mercator, and to have endeavoured to reconcile what has been said or delineated jointly by them with what was laid down

by Ptolemy;—a thing impossible, and any attempt to do which would only add to the confusion which already existed in regard to this geographical question. He is called “learned and accurate;”—learned he was,—and accurate he would have been in regard to the Geir and Ni-Geir, had he only gone to Ptolemy’s own text.

Of Major Rennell’s great and useful labours, I wish to speak with all due respect; but there are some statements of his connected with the geography of Central Africa, which cannot be passed over in a dissertation of this nature.

I shall not enter into a detailed critique of Major Rennell’s “Geographical Illustrations,” appended to Park’s first volume, nor of his Herodotean Geography; but I shall make my remarks in the order in which I find them on a paper I drew up to assist me in carrying on another part of this dissertation.

Major Rennell says, in the first page of the Illustrations, “by Niger the ancients meant to express the river of black people, or Ethiopians. The term is Roman!

for," continues he, "the Greeks believed it to be the head or branch of the Egyptian Nile." I confess I cannot possibly make out why "Niger" must be a "Roman term," (which it is not,) *for*, or *because* the Greeks came to a particular opinion, (and a wrong one too,) that the Niger was the head or branch of another river. I had not looked into the Greek text of Ptolemy ten minutes before I found myself obliged, though reluctantly, to give up all idea that Niger, always written Ni-Geir by Ptolemy, was a Latin word; and I wonder that Major Rennell did not discover the same thing. But there comes an avowal afterwards, which looks as if Major Rennell had not examined Ptolemy very diligently; for he says, "I do not pretend to follow Ptolemy, in his description of rivers in the interior of Africa, as D'Anville has done."

Major Rennell subsequently, after arguing well and truly for the easterly course of the Niger, in despite of Edrisi, and his echo Abulfeda, comes to the conclusion, that the lakes and marshes of Wangara,

which he supposes to extend 300 miles,* (after Edrisi,) in an easterly direction, receive the Niger, whence it does not re-issue, but is disposed of by evaporation,—which he conceives to be a sufficiently powerful agent in those countries to carry off all the collected waters of the Niger.

As I have combatted this opinion elsewhere, and endeavoured to show its physical impossibility, and as, moreover, I have shown, I hope, that the Niger *does* flow beyond the lake or marshes of Wangara, (which appear to be an occasional enlargement of the Tchad,) into the river of Bornou, I need say no more on the subject here.

In regard to Major Rennell's Map, published in 1798, to show the progress of discovery in North Africa, I have to point out one very great error in it, similar to those I have pointed out in D'Anville's Map, namely, that one of the places which is inserted in it with Ptolemy's name attached, is *not* put down in the longitude prescribed by Ptolemy.

* See second paragraph of the note, p. 47.

We are to keep in mind that Major Rennell's first meridian is drawn through Greenwich.

Ptolemy lays down the Libyan Lake in . . . 35° E.

This, deducting 25 degrees, to reduce it from

Ptolemy's longitude, would place the lake

in longitude east of Greenwich 10° .

But Major Rennell has placed it east of

Greenwich in 22° .

differing from Ptolemy no less than twelve degrees: and, if we suppose Ptolemy's longitude drawn through Ferro, differing from him five degrees. In my map, in which I have most scrupulously adhered to Ptolemy, the Libyan lake is 13 degrees of longitude from the Geir—whereas Major Rennell in his map makes it only 6 degrees—giving a relative difference of 7 degrees.

Major Rennell lays down the Chelonidæ in 24° N. latitude, but Ptolemy says they are in 20° N. In short, here, as in other maps, Ptolemy is made to bend to the map, instead of the map being made strictly after Ptolemy, whose name is however attached to these errors.

I do not go further in this analysis, as

I have shown enough to prove how hardly the Alexandrian geographer has been dealt with, under the plea of explaining him, and of setting his geography to rights.

If he could only see Mercator, and some other maps, constructed under his name, he would probably exclaim as Socrates did, on hearing Plato's amplification of his philosophy, " Oh ye gods ! how many things " does that young man make me say which " never entered into my thoughts ! "

I hope that the remarks I have felt myself called upon to make on these two distinguished modern geographers, will be attributed to the true motive, that is, to my desire that errors should not be perpetuated under names so established as to give authority to those errors. The reputations of D'Anville and Rennell may well stand on what they have done correctly, which is much, and cannot be affected by my endeavours to set the few things right in which they appear to have been mistaken.

ON ULIL, AND ITS SALT MINES.

ALTHOUGH my chief object in this dissertation has been to settle the question about the Geir and Ni-Geir of Ptolemy, as well as about the river since known by the more familiar name of Niger, the discussions concerning the site of Ulil have come so often across me, and have been of late years so much mixed up with the above-mentioned subject, and such have been the mistakes made about Ulil, equalling in confusion and contradiction whatever has been propounded about Nigers and Niles, that I hope I shall be excused for saying a few words here on Ulil.

No descriptions or assertions can be more contrary to each other, or wider apart, than the things which have been said of this place.

Ulil has been made, one while a city, another, an island. It has been placed on the shores of the Atlantic; in the mouth of a river running into the Atlantic; in

one of the Cape Verd islands, by a certain Golius, as quoted by Hartmann, who says, "Ulil insularum Hesperidum, seu Capitis Viridis una, sale suo perquam celebris." Hartmann, a commentator on Edrisi, then adds, "ita quoque Sionita Edrisium interpretatur." Ulil has been placed too in the Wangara, which was converted into a salt-water lake, to supply Ulil with salt. Hartmann, who does all he can to puzzle Edrisi, by sometimes condensing, by sometimes amplifying him, and by always overloading him with his own commentaries, begins by doubting whether Ulil island and Ulil city be not two distinct and separate places; and he then sets down the island Ulil in the western part of Nigritia, in the lake Nigrites, which lake he makes a salt brine, to suit his theory. His words are, "non suppressere possum nostram conjecturam,—mare, in quo insula Ulil, autore Edrisio, nec est mare Tenebrarum," (the Atlantic) "quemadmodum Sionita, Hèbelotus, aliique qui hos secuti sunt, (quo jure nescio) asseveraverunt, nec mare ambiens, sed Νιγριτην Λιμνην Ptole-

“ mæi, * * *. Lacus Nigrites aquam sal-
 “ saginem esse si constaret,* mercaturam
 “ illam celebrem inde facile derivares.”

The words of D’Herbelot alluded to here are, “ Ulil, nom d’une Isle du Pays
 “ de Soudan ou Nègres, qui n’est pas
 “ éloignée du continent dans la mer, que
 “ les Arabes appellent Bahr Almodhal-
 “ ham, et qui nous est connu sous le nom
 “ d’Océan Atlantique.” Here then we have also this great orientalist helping to mislead us, from his not reflecting that “ Bahr” meant a lake or river, as often as it did the ocean.

F. Moore, who travelled in 1720, makes the Gambia the outlet of the Niger, and places Ulil on it.

But it is useless to copy here all the theories of the many writers who have puzzled themselves and others about Ulil, solely from their neglecting to state what Edrisi really says, for it is to him we owe our knowledge of that place. I shall now therefore do, in regard to Edrisi, what I did in regard to Ptolemy; I shall take the

* A pretty large postulatam!

author's own expressions, as near as I can get at them, but which I regret I am obliged to do through the medium of Gabriel Sionita's translation into Latin, from my ignorance of Arabic; but which translation bears internal evidence of general fidelity.

Edrisi says, "the island Ulil is situated "in a large water." The words of Sionita are, "in mari," which I have no doubt are so rendered from the word "Bahr," or some synonyme: and we have already had abundant proof that the word "Bahr," so far from meaning exclusively "the sea or "ocean," means much more frequently a lake, or large water, or a river. Edrisi continues, "not far from the shore, and in "this island, is that celebrated salt *mine*," (Sionita renders it by "salis fodinam,") "besides which there is no other, as far as "is known, in all the regions of Nigritia." * * * "Boats coming to this island load "themselves with salt, and then make sail "to the mouth of a large river or Nile, "which" (mouth) "is distant from the "aforesaid island one day's sail."

Surely nothing can be plainer than this. Here is the island Ulil, standing in a great water or lake, a day's sail from the mouth of a river which runs into that lake.

The lake, I have no hesitation in saying at once, is the lake Dombou, or Chelonidæ of Ptolemy, which has generally been called erroneously a salt-water lake,—no doubt because salt comes from it; but the lake Dombou is, and must be a fresh-water lake, because it is the receptacle of, and is formed by the river of Bornou; and the salt which is got in the island is doubtless *rock or fossil salt*, as Sionita implies clearly by using the word “fodina.” Indeed travellers tell us that this salt is carried and sold all over Nigritia in large slabs of many feet in length and several inches thick, a form in which salt crystallized in salt pans would not be found; or, if so found, it would not have sufficient tenacity to be transportable on asses and camels into the inland parts, where the people are so fond of it as to break it off in lumps and suck it, as children here do sugar-plums. We have got over the first difficulty then, by

restoring to Edrisi his true meaning, and by translating his word, which doubtless was "Bahr," into the word "lake," instead of into the word "sea."

To this island then boats went for salt; but it is a day's sail from the mouth of *THE Nile*, that is, of *THAT Nile* which runs into the lake—and that Nile is the river of Bornou. The distance of a day's sail may be taken at 60 or 80 miles, which is as much as boats could perform by daylight; and it is well known to those who have ever travelled on the Ganges, or any other large and powerful stream, that the boatmen, accustomed only to inland navigation, will not encounter in the dark the eddies, projections of banks, and shallows studded with rocks, or bristling with stumps of trees, which had been carried down and lodged by the current; therefore, in their parlance, "*a day's sail*" means always what can be done by daylight. The lake, particularly as the boats approached the mouth of the river, would be full of the latter dangers; but if 60 or 80 miles be not thought enough for a day's

sail, we must recollect that all writers who have spoken of the lake Dombou, have described its size in the strongest terms, and as exceeding that of most other lakes, so that it may be supposed larger than the Tchad, the width of which has been estimated at above 150 miles.

In the margin of Sionita comes one of those annotations with which Editors have delighted in all times to puzzle their readers, but above all the Editors, of works on African geography; and, I fear that Sionita must bear the responsibility of being its author; if so, then comes the corollary that he mistook his author's meaning, when he translated him by the word "mari," and that he really thought that Ulil was in the "ocean." The note in the margin is as follows: "*Est hæc insula, Ulil, fortasse illarum una quæ olim Hesperides dictæ, nunc Insulæ Capitis Viridis, distantes 150 leguas, ferè, ab ostio NIGRI fluvii, qui hic est Nilus.*"* Here then, we have

* Here is another proof, if more were wanted, of the general way in which the word Nilus is used by persons conversant with the languages of the East.

not only an island which is in lake Dombou transported to the Cape Verds, over fifty degrees of longitude, or above 3000 miles from its real position, but, we have the Niger running westward into the Atlantic!

But to continue, Edrisi having brought back his boats, as above, laden with salt, to the mouth of the river, a distance from the island of one day's sail, he tells us that "the salt merchants travel to Salla, Toc-cru, Berissa, Ghana, and the other regions of Vancara and Cauga" (Wangara and Kouka), "and, in short, the whole region of Nigritia, the inhabitants of which, if they do not dwell on the very Nile itself," (that is, on the Niger, or Nile of the Negroes, of which Edrisi is now speaking,) "dwell at least on a river which runs into the Nile." This is evidently Sultan Bello's Kowarrama, or the river of Sokkattoo. "The other countries adjacent to the Nile, on both sides, are desert wilds, and wholly uncultivated, in which however, some channels for irrigation are found" * * *. Edrisi then gives the following itinerary.

“ From the island Ulil to Salla, is 16
“ days’ journey—that city” (Salla) “ is on
“ the northern branch of the Nile; it is
“ populous, and is under the rule of the
“ King of Toccurur. The city of Toccurur
“ is situated on the southern side of the
“ Nile.” Edrisi is evidently speaking here
of the Sokkattoo branch, where Toccurur is,
which runs *westward*, and which he erroneously
considered as the true Nile of the Negroes; and, the Quorra, on which
Salla above named is, he considered as the continuation of the Sokkattoo branch,
running also, of course, to the westward, and this error of Edrisi’s has contributed
more than any other, to confuse writers on this subject; he continues, “ and Toccurur
“ is distant from Salla two days’ journey,
“ whether made by water on the Nile,
“ or by land.” * * * “ From Toccurur to the
“ city of Berissa, lying near the Nile to
“ the eastward are twelve days’ journey;—
“ from Berissa to Ghana towards the east
“ are twelve days’ journey; and, that city”
(Berissa) “ is in the middle of the route

“ which leads to the cities of Salla and
“ Toccrur” that is, from Ghana.

Now although I hope that, from what has been said above, Ulil has been fixed pretty clearly in the lake Domboo, yet, there are some evident errors in Edrisi which require correction, and, I am disposed to attribute them rather to some transcriber than to the author, although Edrisi is sufficiently careless and credulous himself. His fault here, and a fault it is in all authors, is his using numeral notation for his distances or quantities, instead of writing the sums out at length in words,—a neglect of which has been the source of endless errors and difficulties in all ancient authors whenever they speak of quantity or number. Edrisi is made to say in Sionita’s translation, that Salla is sixteen days’ from Ulil; but immediately after, he tells us that from Toccrur to Berissa, is twelve days’, and, from Berissa to Ghana twelve days; but, take these twenty-four days on any tolerable map, in a pair of compasses, and make a fair and

even a liberal allowance for the bends and turns of the route, which probably kept, for the sake of water, pretty close to the river, and we shall find that these twenty-four days' route will hardly reach two-thirds of the distance from Ulil to Salla, which Edrisi has just told us is only sixteen days—so that we have here twenty-four days' route one-third *shorter* than sixteen days' route; but this not all. The people of Audagost of Edrisi (now called Agades) are the great dispensing salt merchants of Ulil, and Edrisi tells us that Audagost is a month's journey from Ulil,—“Audagost “ad insulam Ulil, mensis iter.” But, Audagost is in the route, and just about half-way between Salla and Ulil; if therefore it be thirty days, or a month's journey from Ulil to Audagost, which is half-way between Ulil and Salla, it follows that Audagost is thirty days from Salla also, and then from Ulil to Salla must be sixty days, or thereabouts, and it appears to me evident that we ought to read *sixty* for *sixteen*; and, when we consider the similarity of the Arabic figures for 16 and 60, the number

16 being represented by 14 and 60 by 40 we can easily imagine a mistake by the transcriber.*

These numerical errors, however, of Edrisi, do not materially affect the general question. By placing Ulil in the lake of Domboo, we put it in easy and natural communication with Audagost (Agades), Toccrur, Berissa, Ghana, and all Nigritia—by adverting to the word “fodina,” we arrive at the fact that the salt was fossil and was dug, and not crystallized in salt water, by which we get rid of all the difficulty about salt lakes, which no where

* I am indebted to a learned friend, and most able orientalist for the above information on Arabic notation, as well as for the few remarks I have had occasion to make on the Arabic language in this dissertation. He concluded his answers to my queries with the following just remark, which I hope he will excuse me for having made public; were his name added to it, it would stamp additional value on it. He says “It is much to be lamented “that none of our travellers in Africa have taken the “trouble to get the Arabic terms occurring in their “journal, written by learned Arabs on the spot, and to “ascertain their radical meaning, and whether Arabic or African.” I hope this very just observation will be attended to by future travellers.

exist in Central Africa,* and about the shores of the Atlantic, which are near three thousand miles from lake Dombou and the island of Ulil. By reading the author as he no doubt meant to be understood, that is, as describing Ulil as being in a lake, and not in the ocean—by taking the word NILE, (Nilus, in Sionita,) as applied to the great river of Bornou, or to the Niger, in its generic and indefinite sense, and not in a specific and local one, confined to Egypt alone—by recollecting that the lake Dombou always has been, and still is renowned for its salt works—and, lastly, by reading all that Edrisi has said, with patient, and unprepossessed attention, we come, I think, to the unavoidable conclusion that the problem of the locality of Ulil, will be completely solved

* The substance resembling our culinary salt, found at the edges of lakes in Central Africa, is natron, or carbonate of soda, and not the edible salt, muriate of soda. The pure state in which fossil muriate of soda is found at Ulil, gives it a decisive preference over the small quantities occasionally found elsewhere, mixed with a much larger quantity of natron. It is known that deposits of *rock salt* no where contain carbonate of soda.

M

by placing that island and its salt mines in the lake Domboo.

In case any farther attempts should be made to explore the Tchad, the eastern parts of the Niger, and that part of Central Africa which lies adjacent, I cannot help thinking that it might be done with least risk of health, and consequently with the greatest hope of success, by setting out from Tripoli, and proceeding to Agades by way of Mourzouk.

The expedition should then divide into two parties, one going east, with the Agades salt merchants to the lake Domboo, there to visit Ulil, and to ascertain exactly, *where*, and in *what manner*, the Niger, or Nile of Bornou enters the sands of Bilmah; when this party, having been properly introduced to the navigators of the lake Domboo by their friends from Agades, should proceed up the river of Bornou, carefully examining the western bank to discover the *supposed* communication with the Tchad, or the lake of Wangara: and should such communication be found to exist, they should sail up it as

far as they could, and, at all events, penetrate to the lake, by means of, or alongside the stream, crossing, or travelling along the coast of the Tchad or Wangara, till they reach Kouka, in which town the party which first arrives should await the other party, and where the recollection of Major Denham, and his amiable qualities and prudent conduct, would no doubt secure them a favourable reception.

The other party should proceed from Agades, with other salt merchants to Salla, Toccurur, and other places along the Niger, till they could embark or proceed by land to Kouka. Here, if such a union of the two parties should be found practicable, they might combine their geographical notices, and a great advance might be made in African geography; but I will here make a passing observation, that although it is important that the gentlemen at the head of such an expedition, should go out unbiassed and unprejudiced as to any particular theory in regard to Ptolemy, or the Geir, or the Ni-Geir, their junction or their ending, it is by no means necessary

or advisable that they should be sent out mere blank sheets of paper, utterly unacquainted with the several points of discussion which have puzzled and vexed geographers and others for so many years in regard to this subject. They ought, on the contrary, to be aware of all the theories and statements, ancient and modern, which have been advanced, but they should be enslaved by none; they will then be able to see as they ought to see, not only physically but intellectually, for to give any satisfactory account of any object of sense, the mind must be called in aid of the physical organ.

From Kouka a various and wide field would offer itself for further research. It would be very desirable to visit the mines of Fertit, and ascertain on the spot what Ptolemy meant by "Garamantica Pharanx," and if this spot be really, as I have supposed it to be, a mine at or near the source of the Geir,—thence they might proceed to Egypt along the Bahr Abiad; or should these two objects be unattainable, they might reach Egypt at once from

Kouka, through Nubia and the Great Oasis, by the caravan which is said to take that route annually.

Warned as they now would be, against the delusions of the words "*Nile*" and "*Bahr*," which have produced such confusion in African geography, and choosing the proper seasons for their journies, for which I would allot two years, in order to embrace all the seasons, in different parts of the route, and to enable the travellers to take the most favourable, great geographical results might be attained, and the veil which has hitherto covered most of what regards the Geir and Ni-Geir of Ptolemy, and the Niger of the moderns, might be completely removed, and geographical truths might be substituted for vague conjecture.

I am aware, and therefore afraid, that I may be accused of presumption, in having attempted to clear up difficulties which have puzzled and foiled so many much more able and much more learned persons than myself; but, whatever may be my imperfections, and I am sensible that I have

many, presumption, in this instance at least, is not amongst them; for I know that I have brought nothing to my task but the very humble qualities of freedom from prejudice and patience of research. Had this work required either deep knowledge or great talent, I should have forbore to undertake it, from the conviction that it would be beyond my powers; but when I first considered the subject, I soon discovered that it might be handled, perhaps successfully, by a person possessed of the two very unpretending qualities which I have ventured to claim as my qualifications for composing the Dissertation I have now completed.

All attempts at deprecating the severity of criticism I know are useless; and that I should plead in vain, as titles to indulgence, the profession to which I belong, and the active life I have necessarily led as a soldier, in all the quarters of the globe, from the age of thirteen to the late peace. He who writes and publishes, implies, *primâ facie*, that he thinks he knows more of the matter he treats on than others, and

his appeal for indulgence will be answered by an *argumentum ad crepidam*. I have not, however, this opinion of myself. I am aware how little knowledge I possess. My production here, such as it is, is not so much the offspring of myself, as of the ancient authors, particularly Ptolemy, whom I have tried to illustrate. My office has been rather ministerial than original; but humble as I feel it to have been, I shall be amply rewarded if the result of my labours should be to clear up, in any way, the mists which have so long overhung the questions I have here discussed, or to facilitate, in however small a degree, the researches and efforts of future investigators.

ADDITIONAL NOTES.

To avoid encumbering the preceding pages with notes of too great a length, I have thrown some additional observations I have thought it necessary to make, into this place.

I. Ptolemy entitles one of his preliminary chapters thus—"Concerning those things regarding the Longitudes of the Earth in which Marinus is mistaken;" and he censures this Marinus for having gone the wrong way to work in the mechanical part of his geographical admeasurements. Ptolemy here speaks of the "Fortunate Isles" as his westernmost point, and of Seræ, Sinæ, and Cattigara as his easternmost points. He adverts to the division of a Great Circle into 360 degrees, and embraces the whole known earth in one half of that circle—that is, in 180 degrees—placing the "Fortunate Isles" at one extremity of that

half, and Sinæ Metropolis at the other extremity, or in 180° E.

The following are the latitudes and longitudes he gives of his easternmost points:—

Seræ Metropolis he places in $177^{\circ} 15'$ E.— $38^{\circ} 36'$ N.

Sinæ Metrop. (written also

Θειναι) in $180^{\circ} 0'$ E.— $3^{\circ} 0'$ S.

And Cattigara, Sinarum Sta-

tio, in $177^{\circ} 0'$ E.— $8^{\circ} 30'$ S.

In his twelfth preliminary chapter, Ptolemy says—“ The longitude of the whole known “ earth, from the meridian drawn through the “ *Fortunate Isles* to Seræ, amounts to 177° “ degrees and a fraction.” His words are—

Τὸ δ' ὅλη τῆς ἐγνωσμένης γῆς μῆκος, ἀπὸ τοῦ διὰ τῶν μακα-
ρων Νήσων μεσημβρίνῃς μέχρι τῆς Σηράς, τὰς ἐπὶ τούτῳ μοίρας
—ε' ὀ' ε' —δ'.

He notices and enumerates the “ *Fortunate Isles*” as follows:—

Καὶ αἱ τῶν μακαρων Νῆσοι ἐξ τὸν ἀριθμὸν

Ἀπρυσίτος Νῆσος . . . , ις' — 0° $16^{\circ} 0'$ N.

Ἡρας Νῆσος . . . , ἁ' ιε' δ' — 1° E. $15^{\circ} 15'$ N.

Πλαίταλα Νῆσος . . . , ιθ' δ' — 0° $14^{\circ} 15'$ N.

Κασπείρια Νῆσος . . . , ιβ' λ' — 0° $12^{\circ} 30'$ N.

Καναρία Νῆσος . . . , ἁ' ια' — 1° E. $11^{\circ} 0'$ N.

Κεντρεία Νῆσος . . . , ια' — 0° $10^{\circ} 30'$ N.

Now, there are thirteen Canary Isles, not six, as Ptolemy says; and there are ten Cape Verd Islands; so that, numerically, Ptolemy

agrees with neither of these clusters of islands; but it is his *latitude* which indicates clearly to us of what islands he was speaking; and he has fixed, by his latitude, his "Fortunate Isles" off Cape Verd, as may be seen above. The name of the fifth island appears to have given the name to the whole cluster, but this name, The Canaries, when adopted, ought to have been applied to the Cape Verd Islands, and not to the others, which are above eleven degrees to the northward of the mean of the islands of which Ptolemy was speaking, and through which he so expressly says he drew his first meridian.

II. In addition to my observations on the Greek article, in the note at page 12, the following have occurred since writing that note.

Tyrtæus, who, according to Sir Isaac Newton's Chronology, is the most ancient Greek poet after Homer and Hesiod, very seldom introduces the article into his four celebrated Polemisteria; and, whenever he does introduce it, it is either for the purpose of "reference to something before in the mind," or to some quality or thing to which the poet wishes to apply a particular emphasis, according to Dr.

Middleton's principle; which proves clearly that Tyrtaeus did not consider the article as a thing to be used without meaning, for the mere sake of either euphony or metre.

In the first of his four Parænetic Songs, consisting of forty-four lines, Tyrtaeus uses the article only twice, although these lines abound in substantives. The first article we find is in the beginning of the thirteenth line, where he mentions for the first time that great quality, or virtue, which he is come to awaken amongst the Spartans; and the second article is in the same line, where he again describes that quality by a periphrasis—

Ἡ δ' Ἀρετή, τοῦ ἀεθλον ἐν Ἀνδραποισιν ἄριστον.

The next article we find in this first song is in the nineteenth line, where it has the force of the English intensive “very”—“the very “next man”—τον πλησίον ἀνδρα; the object of which is to urge each Spartan to animate *the very next man* to him in battle in a particular manner. No article occurs in the remaining twenty-five lines of the first song.

In the second and third Polemistaria no article at all occurs. The poet is dealing in *general* exhortations and praises of valour, and in *general* censures of cowardice. The emphasis of the article was not wanted. These two

songs, written wholly without the article, consist of fifty-nine lines.

In the fourth song he uses the article no less than four times—which is twice as often as he uses it in all the preceding three songs of this poem; but this frequent repetition is evidently owing to his increased emphasis and earnestness as he is drawing to a close. He is here in such haste to make an impression on his audience, that he calls in the aid of the article in his second line; but on what word does he place it?—on the sacred name of “country!” to defend which he is come to exhort the Spartans—

περὶ ἧ Πατρίδι μαγνόμενον.

In the very next line we have another article; and that is placed on the sacred name of the “city” which the Spartans have to defend.

Την δ' αὖτ' προλιπόντα πόλιν.

In the nineteenth and twentieth lines we have the article twice used emphatically, to call the attention of the young warriors to the disgrace of deserting those who are as dear as country itself—their parents and old men.

Τὸς δὲ παλαιότερους, ὧν ἐκέλει γοναῖ' ἐλαφρά

Μὴ καταλείπονίης, φευγετε, τες γεραιες.

Now if a free use of the article as a mere expletive or pleonasm, as Scaliger and Budæus

appear to have thought it, be allowable to anybody, it is allowable to a poet, whose chinks it would so conveniently fill up, and whose rhythm it would so opportunely often sustain: but Tyrtæus knew the power and force of the Greek article, and he respected it accordingly, for he never introduces it but under the circumstances prescribed so many years after him by Horace for another piece of poetical machinery,

“ *Nec Deus intersit, nisi dignus vindice nodus.*”

III. As my belief in the fact of a communication between the Tchad and the Nile of Bornou is an important point in my Dissertation, I hope I shall be excused for adducing here, in addition to the many proofs of the existence of such a channel which I have brought forward in the preceding pages, the testimony of Captain Lyon, as given in his Travels in North Africa between 1818 and 1820.

Captain Lyon says the nephew of the cadi told him, that

“ the Tsad is not a river, but an immense lake, into
“ which many streams discharge themselves after the
“ summer rains. It is then for some months of such an
“ extent that the opposite shores cannot be seen. * * *
“ In the early part of the spring, when the great heats

“ come on, it soon changes its appearance and dries up, “ with the exception of a small rill. This streamlet, “ which runs through the centre of its bed, is called by “ the same name, and comes from the westward, *taking* “ *an easterly* direction, but to what place he knows “ not.”

Further on Captain Lyon speaks of a river running through Kanem, which is the name Edrisi occasionally applies to Bornou, which he describes as “ deep, broad, and full of fish; it “ is called by the people Yaoo, but by Moorish “ traders Nil.”

Now here we have a stream flowing out of the Tchad towards the east, and the Nile of Bornou in the very direction to receive it.

In speaking of “ the Nil, Goulbi, Joliba, or “ Kattagan,” (p. 148,) Captain Lyon, after saying it runs into the lake Tchad, continues,

“ Beyond this lake *a large river* runs through Bag- “ hermee, and is called the Gambarroo and Kamma- “ dakoo, the word Nil being also used for the same “ stream. Thus far we are able to trace the Nil—all “ other accounts are merely conjectural; *all agree*, “ however, that *by one route or another these waters* “ *join the great Nile of Egypt*, to the southward of “ Dongola.”

Now this gives us, in the first place, more evidence of the universal opinion that “ these waters,” that is, those spoken of as entering the Tchad, and then flowing out of it by a “ large

river," (which by the way, is at variance with the "streamlet" before spoken of,) join the Nile of Egypt by one route or another; that is, all agree that the Niger does *not stop* at the Tchad, but flows beyond it to the eastward; and secondly, we are here told that these waters join the Nile somewhere to the *southward* of Dongola. By laying a ruler on any good modern map of Africa, so as to lie between the Tchad, and a point on the Nile of Egypt, say a degree or so, to the south of Dongola, as above specified, the edge of that ruler will then pass either over or very near to lat. 16° N. and long. 46° E., which is the very spot in which Ptolemy says the branch of the Geir is to be found after its re-appearance from under ground;* and this will show a course pointing exactly to the specified part of the Egyptian Nile. All this to be sure is not mathematical proof, but I think it moral proof of the strongest nature, when combined with all that has gone before, that the Niger does flow through the Tchad, and join the Nile of Bornou; and if so my case

* I have referred here to any good modern map in preference to my own annexed map of Central Africa, because I see there is a trifling inaccuracy in it, in separating the latitude from the longitude. The lat. 16° ought to have been placed under the longitude. This correction may be easily made in the map with a pen.

for the continuity of the Niger from the Mandingo mountains to the deserts of Bilmah is made out; and this will take it, not only quite out of the reach of the Congo, but well on towards the Mediterranean. Whether or no the united rivers of the Nile of the Negroes (Niger) and the Nile of Bornou force their way through the sands to the Great Syrtis, is another question; and all I have to say on that subject will be found in the body of the preceding Dissertation. I certainly feel myself strongly impressed with a belief that the account I give there is the true one; but a man's opinion of his own theories should always be received with distrust, and what I have ventured to suggest as to the ultimate disposal of a body of water, far exceeding in volume that of the Egyptian Nile, must and indeed will be tried and judged on its own merits alone.

IV. In my note at page 12, I fear that I have expressed myself too decidedly on the subject of the Greek Digamma, and on its not belonging exclusively to the Æolic dialect. I ought there to have ventured only an Opinion, whereas I perceive I have, in the warmth of following up my subject, pronounced a Judgment. My

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opinions on the Greek Digamma are as follows, but I offer them with much diffidence.

My belief is that the Greek Digamma was used universally in all the dialects, and that it was nothing more or less than a variable Euphonic, interposed at the will or taste of the speaker, to prevent either a hiatus, in which case it was a consonant; or to give melody to the sentence, in which case it was a vowel; or to impart force to the ictus metricus of the passage, in which case it was an aspirate: and my opinion further is, that those learned persons who have thought proper to represent the Digamma at all times, and in all situations, by any particular letter, or by any unvarying mark, have been in error; indeed I object to the name of Digamma as descriptive or explanatory of the thing I am speaking of, which in truth was, "*Vox et præ-
terea nihil.*" If one might venture to give it a new name, I would call it *κατ' ἐξοχὴν*—"the Greek Euphonic;" but as a change of that sort must come, if ever, from much higher authority than mine, I shall continue to speak of the sound in question by the usual and received term—Digamma.

The Digamma, then, was a nonentity, without either form or substance, until it was called into existence, properly and gracefully, by the good taste of the speaker. The delicate organs of.

the Athenians made them, no doubt, above all the other Greeks pre-eminent performers on the Digamma, if I may so express myself; while a Bæotian would probably introduce his intended Euphonic in bad taste, just as a bad performer now might introduce an unharmonious or impertinent "grace" into a piece of music. The educated and polished amongst the Greeks doubtless used, in general, the Digamma with a taste and judgment analogous to the delicacy of their organs. But who shall say now, with anything like certainty, what this variable and airy Euphonic was? whether it was always the same in the same dialect? or whether it was changeable and uncertain, as the taste and fancy of each speaker? or whether there was some rule directing its use in particular places and before particular words or letters, as the moderns pretend is the case with some words, particularly the word *ίφί*, before which, say they, there must always be the Digamma sounded "Vau?"*

Who shall give answers to these queries, particularly in England, where we have lost, perhaps in a greater degree than anywhere else, all vestige of the true pronunciation of the Greek and Latin Languages?

* See Dawes's *Miscellanea Crit.* on the Vau of the Ionians.

Some years ago, a learned native of the Ionian Islands, in speaking to me of our pronunciation of his language—for he spoke of the ancient as well as of the modern Greek, as *his* language—said, that an Englishman spoke Greek “like a rustic”—*αγροικῶς πῶς*.—And, to be sure, after hearing a modern Greek read over a hundred lines of Homer, running, softening down as he does the syllables into each other, applying nevertheless, the *Ictus metricus* occasionally with great force and taste—after this, to hear an Englishman mouth out his *πολυφλοίσβοιο θαλάσσης*, is not only ridiculous, but fatiguing. The modern Greeks no doubt have lost much, very much, of the ancient pronunciation and rhythm; but every consideration, both local and critical, conspires to make us think that they must be infinitely nearer to that pronunciation and rhythm than we are; and the distance between our intonation and that of the modern Greeks is great indeed! Yet, with the Greek Islands in our possession, we do not make an effort—at least not a national one—to get a somewhat less tramontane mode of Hellenizing.

My former situation of quarter-master general to the army in the Mediterranean, brought me frequently in close communication with both the learned and the unlearned inhabitants of the Ionian Isles; and the former, finding I

knew something of their language, made many very curious observations to me, of which, I regret to say, I can now find no record;—but, I will tell those who have never heard it, that it is worth while to go on purpose all the way to the Greek Islands to hear a pretty and well-educated Greek girl recite the celebrated fragment of Sappho, which has been translated by Catullus and Boileau, and transferred into our own language by Philips in almost all its original grace.

While hearing chaunts like these, one almost thinks oneself carried back to the classical ages—one almost feels the “*mens divini*,” the subtile undefinable power by which the ancient Greeks themselves poured forth their mellifluous language; and one does not seem so much to learn something new, as to be reminded of something one knew before—it makes one almost exclaim, “*Panthoides Euphorbus eram*”—so much is he who listens transported back to ancient times; and he is disposed to admit at once the Platonic doctrine, that what we acquire under the name of knowledge, is only “the reminiscence” of what was in the mind before; but reveries like these are rather out of place in a critical disquisition on the Digamma. I cannot, however, conclude this part of the subject without remarking, that however ne-

cessary deep erudition may be—and it is necessary—in discussing this matter, yet erudition alone is not sufficient—it ought to be accompanied by a refined and delicate taste, a lively but regulated imagination, an ear for music, some knowledge of the philosophy of that divine science, and a tolerable acquaintance with modern languages; but in these latter and lighter qualifications, some of the learned Thebans who first handled the digamma were deficient—they grasped with huge two-handed force an evanescent gossamer being, which ought to have been examined without even breathing on it too roughly; and they applied to the analysis of a sound, instruments which would have anatomized the Behemoth. It is not every man who can imagine the want of some interposing or diluting sound in particular places; who can comprehend or feel the yawning ache of a hiatus; or the sustaining comfort of a well-timed digammic appoggiatura!*

I need not say, after such a detail of required qualities as the above, how terribly I feel my own deficiencies, and how conscious I am that I ought to express myself, (as I hope I have done,) with the greatest diffidence in advancing

* See Hermann's notion of a Hiatus in his "Orphica," beginning with "Vocamus autem Hiatum," and ending with "Non ergo sunt hi Hiatus."

my opinions—but, so strongly was I impressed with some of them when in the Mediterranean, that I recollect I never could read Homer aloud there, without introducing the Digamma in various ways, according to my, perhaps, audacious and barbarous notions as to its being wanted.

It would not be difficult, I think, to show that the digamma is virtually used in other languages besides the Greek—I think I have detected it in Latin, on the Duillian Rostral Column at Rome, where we find an indurating D introduced every now and then, as in “Marid,” for “Mari.” This is a sign of very bad taste in the earlier Romans, for their language was always, from first to last, too abundant in consonants, and consequently too hard and inflexible.

Virgil felt this, and did all he could to melodize and soften his native tongue by introducing Greek names, and, above all, Greek cadences—I will take one instance:

“supervenit Ægle,
“Ægle, Naiadum pulcherrima!”

into which one of the old hard-bitten Romans would have wedged a digammic D, or two.

But, our neighbours the French, whose agreeable language is not very mellifluous, but which is formed by them for conversation, in which they excel, found they could not get on with-

out an occasional Digamma. For instance—their pronunciation would have broken down, and their rapidity of speech would have been brought to a full stop without the aid of a digammic T in the following colloquial sentence—*n'y a-t-il pas*—let any one insert the above phrase in a sentence, and leaving out the T, try to pronounce the whole in the usual style of conversation, and he will feel where he will be, without the friendly support of the French Digamma; but strange to say, the Hottentots at the Cape of Good Hope, have *their* Digamma. Their language is extremely vocal, perhaps indeed they have no consonants strictly speaking—but as it would be impossible, or very difficult, to go on talking always in vowels, the Hottentots have invented a sort of clicking, hard sound, which they modify *ad libitum*, but of which it would be in vain to try to give the least idea by the combination of any letters of any known alphabet, but which prevents their words and sentences from being melted down into one another in one mass. We Europeans cannot ever learn to imitate this digammic clicking sound when we hear it; but as we are obliged to try to write down the Hottentot names of places, I will take the name of a river, the Keis-Kama, for what we do in this way, in which the first K and the second K are meant

to represent the Hottentot Digamma as we hear it, or as we think we hear it. The ears and voices of the Hottentots are naturally very musical, and those who have been taught to sing by the Moravian missionaries excel as vocalists.

Should it be objected that the Hottentots are too low in the scale of civilization to deal in such luxuries, I will ask, how much higher in that scale did the Pelasgi stand when they brought their harsh language and the Digamma from Thrace into Greece, according to the theory of the Right Reverend and Learned author of the "*Horæ Pelasgiæ?*" It rather appears, from all we can collect on the subject, that the good old substantial Digamma was of very barbarous origin, and that like the nymph Echo, it was only by degrees that it dwindled away to its graceful tenuity in Homer's days—"corpus
"adhuc Echo—non vox erat," but by and by,

————— "*in aëra succus*

"*Corporis omnis abit;*"

and we find the hard Pelasgic Digamma at last refined down into a sort of musical sound.

But it is time to say something of the character F, by which the learned have been accustomed to represent the Æolic digamma. This may, or may not, have been the mark peculiarly

used by the Æolians—or they may have had more than one mark to indicate the introduction of some adventitious sound; but I feel a strong conviction on my mind that the ancient Greeks had many other modes of noting where, and even how a required Euphonic was to be introduced into a word or sentence, which had either too many or too few vowels; but the sound and power of the Digamma so introduced, would vary according to the genius and character of the dialect to which it was to be applied. If the dialect abounded in vowels, a consonantal Digamma would be interposed as an appoggiamento—if consonants were too thick and hard, they would be softened by a digammic ou, vau, or waugh, or some diluting sound—perhaps by the letter L.

The vau has generally been attributed to the Ionic dialect. Homer is supposed to have graced his verses with it, but I never could hear of any satisfactory reason for the rule which has been laid down for prefixing the vau always to the word *ίφι*, although I confess I myself feel the want of it, or something like it, to prevent the hiatus in Homer's

“ Τελεδοιο δε *ίφι* ανασσεις,”

Mr. Payne Knight, in his Analytical Essay, says, that the Digamma was “certainly pro-

“nounced rather as a simple aspirate, than as “an aspirated consonant.” If this learned gentleman had taken a wider view of the subject, he would have extended the power of the Digamma, and have discovered that it was necessary, in forming a complete idea of Greek cadence and intonation, that the Digamma should be assimilated to the dialect to which it was appended—a consonant in some, a vowel in others—and only every now and then merely an aspirate, as suggested by Mr. Knight.

Professor Dunbar, of Edinburgh, whose admirable work on Greek Prosody* ought to be better known and more highly appreciated than it yet appears to be in this southern part of our island, quotes Hesychius to show that the letters B and Γ were frequently employed by different tribes *instead* of the Digamma. I will extend Hesychius’s remark, and say that B and Γ were actually and absolutely *the Digamma* of those tribes; or, to speak more philosophically, these two letters were their adjutory Euphonics;—they felt the want of such sounds in their dialects, and introduced them accordingly. But, even now-a-days, moderns—nay Englishmen—may have their ears so Hellenized by a resi-

* My edition of the “Prosodia Græca” is Edinburgh, 1815. I know not if any later edition exists.

dence in the Greek Islands, that they acquire a craving after *a* digamma when speaking modern Greek; so much so that a most amiable and accomplished acquaintance of mine, the late Mr. F. Douglas, adopted one off-hand in an interview he had with Ali Pacha, when the Pacha seeing him in some volunteer or militia uniform, asked him abruptly, "Where have you served?"—"On this," said Mr. Douglas, "I immediately tipped him the Digamma, and answered *ἐπὶ τὸ Φιμβλετὸν κομμὸν*;" giving to his F the force of Gh, strongly aspirated, to avoid the painful hiatus of *ἐπὶ τὸ Ουίμβλεδὸν κομμὸν*, as our vernacular Wimbledon would be spelt in modern Greek. This shows how much taste and ear have to do in the selection of an appropriate Digamma. Had Mr. Douglas applied the *vau* as an inhabitant of Bow would have done, it would have produced a most unclassical effect, and would have been an instance of the very *βαθος* in Euphonics. It will be seen by this that a speaker of even modern Greek, whose ear is properly attuned, will interpose a well-suited Digamma wherever it is wanted; and I have no doubt but the accomplished scholar of whom I have just spoken did vary his, according to the principles I have been laying down, and which he appears to have applied in his answer to the Pacha.

Professor Dunbar argues that the language of Greece had arrived at such a degree of refinement in the time of Homer that the *vau*, and indeed every sort of consonantal Digamma, had fallen into disuse. In speaking of Homer's language he says, "It is altogether at variance with its character to suppose the Digamma was ever used but as a vowel sound." Mr. Dunbar possesses so much taste as well as so much learning that it is dangerous to differ from him, but I cannot help thinking that the Great Poet when reciting his verses, his "eye in a fine phrenzy rolling," threw in his digammic euphonics, sometimes the spiritus asper, either alone, or prefixed, or in compound, as in *Gh*—sometimes *vau*, sometimes *Γ*, sometimes *F*, with *ρα*, *δε*, *ἔν*,* *φι*, *ν*, (this last added to datives plural, or to verbs and others,) in places and at times when his highly attuned ear felt they were wanted—for instance, *αὐτὰρ ὁ ἔγνω*, in the first Iliad. I cannot but think Homer interposed something consonantal between the *ο* and the *ε*: my ears, as well as my recollections of modern Greek, would put there something like a *δ*, or

* *ἔν*.—I am well aware that this adjunctive particle has often the power of a preposition as in *εἰρανοθεν*, but it is used by Homer as a Euphonic, and comes, I think, fairly within the principle I am trying to establish. I have the same remark to make of *δε*.

a γ, but this is very delicate ground. Such sounds, however, as Homer would so introduce, were in all probability so lightly touched with what the Italian poets call a “Pennel’ Divino,” as to render it almost impossible in his refined state of the language to note them down, or fix them in a corporeal shape; and to this extreme evanescence of their nature in his day, I am disposed to attribute the general disappearance of the Digamma in the Homeric Poems; but I am far from thinking that it has wholly disappeared. We find it affixed to words in various ways. I will only instance the ν as we find it added to datives plural and to verbs, *e. gr.* νίφαδισσιν ιοιχόλα χειμερησιν Ουκ’ αν, &c. Here we have the digammic ν twice in three words, to prevent hiatus; in the last to prevent hiatus with the following line—a proof how Homer poured out his continuous torrent from one verse into another.

Having mentioned the learned Greek Professor of Edinburgh, I must beg leave to add my humble but unqualified assent to the expulsion of the Digamma as an element of Homeric prosody. Mr. Dunbar has proved most clearly, I think, that *one* of Homer’s rules was that the *first* syllable of a foot should always be *long*, as in Αῖς Αῖς, where the Α is naturally short in the second word, but *long* by .

the Homeric rule in the first. This discovery, for discovery it is, smooths many of the difficulties which occur in the prosody of Homer, amongst others the hitherto inexplicable one of

“ παῖδα δὲ μοι λυσᾶντε φίλην,”

in the beginning of the first book of the Iliad, on which the learned and excellent Dr. Clarke has written so deplorable a note in his edition of Homer.

The fact of the existence of this rule is proved by Mr. Dunbar in hundreds of instances. *Why* it is a rule matters not—there it is—and it is almost impossible to read fifty lines of Homer without having a grateful recourse to it to explain some prosodial difficulty.* Bentley has written with great learning and acumen, no doubt, on the application of the Digamma to Homeric prosody, but he does not afford a general canon which shall meet all cases. Mr. Dunbar has afforded that canon, and I adopt it, to the exclusion of others, on the Newtonian

* For instance, ἐκηβόλε Ἀπολλωνος; but A is *short*, as in Φοῖβος Ἀπολλων, &c. φι, in φίλος is naturally *short*, but as a first syllable of a foot it is *long* in Homer, φιλε κασιγνήτε. Mr. Dunbar explains some anomalies in Latin prosody by the same rule—for instance, “*Molli fultus Hyacintho,*” “*Gravidus Autumnus,*” &c. from Virgil.

principle, which teaches us when we have discovered one cause adequate to a known effect, not to look out for or apply other causes to account for that effect.

POSTSCRIPT.

May 12, 1829.

HAVING just corrected the last sheet for the press, I have this moment had put into my hands the Quarterly Review for July, 1822, in which is a most able and admirable article on the Digamma. As the printer waits for my last corrections, I have neither time to read over that article as it ought to be read, nor to express as I ought to do my great satisfaction at finding the able writer of it agreeing in many of my principles on the Digamma, as laid down in the preceding note. Most of the remarks in that note were written in the Mediterranean eighteen years ago, and some of them in the blank leaves of Professor Dunbar's Prosodia Græca, (where they remain in pencil,) on

a voyage to the East Indies in 1816; and a few in the same way at sea, on my return from the Cape of Good Hope in 1822; consequently, any coincidence between my note and the article in the Quarterly Review of which I have spoken is quite accidental. I need hardly say, however, how much I regret not having seen that article before my remarks on the Digamma were printed. Had I done so, I should not only have profited by it, but I should have endeavoured to discover the name of the learned writer, in order to have submitted to his criticism my own remarks.

Whoever he may be, I cannot help thinking that he must have been in the Greek Islands, or else have conversed much with literary modern Greeks here. He has certainly brought to his work all the requisites pointed out by me in my preceding note—learning, taste, and general literature.

I had made up my mind to be attacked for my critical heresies in regard to the Digamma,

and I was not without my fears on that subject; but those fears are considerably allayed since I have discovered the broad shield of a literary Ajax, behind which I can shelter myself occasionally.

R. S. D.

THE END.

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ERRATA.

Page 13, the Note, line 15, for " his second article," read " his second paragraph."

Page 18, line 11, after " out of a lake" insert a semicolon.

Page 64, line 8, for " Tiberti," read " Tibesti."

Page 73, line 3, for " somewhere to the southward of the 16th degree of north latitude," read " somewhere about the 16th degree," &c.

TO THE BINDER.

BIND Sultan Bello's Map facing page 129, and fold it so as to open out to the *left*.

Bind the other two Maps at the *end* of the book, and fold them so as to open out to the *right*.—The *smaller* of these two Maps to be placed *first*.

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